THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XIX. No. 451—22ND YEAR.] LONDON, FEBRUARY 1, 1870. [Subscription per Annum. 15s. in Advance. 18s. Credit. DOUBLE NO. Price 1s.

RAMSAY'S NEWCASTLE CANNEL
COAL. Analysis—
10,000 cubic feet of gas per ton of coal.
26-candle gas.
15¼ cwt. coke per ton of coal.
RAMSAY'S PATENT CONDENSED COKE.
DO. GARESFIELD COKE.

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GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire-Clay.
The Fire-Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the Works are the most extensive in the Kingdom.
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Address G. H. RAMSAY, NEWCASTLE-ON-TYNE.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.

PARIS EXHIBITION, 1867.
THE TESTING-HOUSE REPORTS.
The Reports prepared for the Science and Art Department, under the direction of the Lords of the Council, detail the arrangements made for testing the gas apparatus exhibited. In the testing-house erected by the Special Committee appointed to further this object a gasholder was constructed by Mr. G. Glover, being a *fac simile* of that produced and patented by him in 1860, and deposited in the Exchequer, under the provisions of the Sales of Gas Act, and British manufacturers of gas apparatus were invited by advertisement, and by direct application, to forward worthy objects for exhibition. Mr. G. Glover was, however, the only manufacturer who sent Meters to be tested. The report states that, as "Mr. Glover is a manufacturer of Dry Meters only, no opportunity presented itself of comparing their accuracy with that of Wet Meters under various circumstances, but the perfection to which that maker has brought his Meters prevents the possibility of those extravagant errors which are well known to exist where Wet Meters are used."
Particulars and lists of prices forwarded on application to Ranelagh Works, Ranelagh Road, Pimlico, LONDON, S.W.; 15, Market Street, MANCHESTER; or 127, Boulevard de Magenta, PARIS.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS-RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS-RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
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Coal Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

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JOHN RUSSELL and CO.,
THE OLD TUBE-WORKS,
CHURCH HILL, WEDNESBURY;
ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas-Tubes, and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam-Boilers.
J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest orders may be executed in a few days.
Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanized Tubes, &c.
N.B.—All goods thoroughly tested before sent out, and warranted.

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WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

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NEAR NEWCASTLE-ON-TYNE.
WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
London Agents: JAMES LAWRIE & CO.,
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THE "LOTHIAN" CANNEL COALS.
These Cannels are extensively used in the Gas-Works of Edinburgh, where the illuminating power of the gas is the highest in Britain.
The yield per ton is 12,573 cubic feet; illuminating power, 33·8 standard candles; coke per ton, 1046 lbs.
Ports of Shipment, in the Firth of Forth.

BO'NESS CANNEL COALS.—This Cannel is largely used in Gas-Works where, in addition to high illuminating power, there exists a demand for superior Coke, it being the best Coke-producing Cannel of all Scottish Cannels. It yields about 11,000 cubic feet of 25 standard candle gas per ton.
Ports of Shipment, either the Forth or the Clyde.
Apply to J. and W. ROMANS, 53, Frederick Street, EDINBURGH; and 1, Walbrook, Mansion House, LONDON.

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AUCHINHEATH COLLIERY,
LESMAHAGO, N.B.

JAMES FERGUSON & CO.
LESSEES SINCE 1832.
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CONTINENTAL AGENTS:
LA COUR & WATSON,
LEITH.

GEORGE GLOVER AND CO.,
Patentees of the Standard Gasometers for the Government,
TWO MEDALS,

LONDON, 1862.
HAVE OBTAINED THE
HIGHEST
PRIZE
FOR
SILVER MEDAL,

PARIS, 1867.
IMPROVED DRY GAS-METERS AND GASOMETERS,
AT THE
PARIS EXHIBITION.
RANELAGH WORKS, RANELAGH ROAD, PIMLICO, LONDON, S.W.
AND 127, BOULEVARD DE MAGENTA, PARIS.

ONE PENNY
JOURNAL OF GAS LIGHTING
NEWSPAPER

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COOMBS WOOD PATENT TUBE-WORKS,

OLD HILL, near DUDLEY,

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PATENT WELDED WROUGHT-IRON TUBES & FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS for IRONFOUNDERS, STOCKS, TAPS, & DIES, IRON COCKS, &c.

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J. R. HILL, 73, Hatton Garden, E.C.

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MANUFACTURERS of FIRE-BRICKS, LUMPS, & TILES,

AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short notice.

SILVER MEDAL, PARIS EXHIBITION, 1867.

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ALBION TUBE-WORKS, BIRMINGHAM,

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WROUGHT-IRON TUBES AND FITTINGS

For Gas, Steam, Water, &c.

SOLE LICENSEES for the United Kingdom for the LAVENANT PATENT ENAMELLED TUBES & FITTINGS,

the Coating of which does not shell off, is a certain preservative from rust, and resists all effects of expansion and contraction.

LAP-WELDED IRON & HOMOGENEOUS METAL TUBES

For Locomotive, Marine, and Stationary Boilers.

Boiler-Tube Ferrules, Gun-Metal Gland Cocks, Water-Gauges, Whistles, &c.; Stocks, Taps, and Dies for Screwing, and Gas-Fitters Tools of all kinds.

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MANCHESTER: Barlow's Croft, Chapel Street, Salford. PARIS and LILLE.

BEST AND HOLDEN'S

PATENTS FOR CHARGING AND DRAWING GAS-RETORTS,

WITH CHAMBERS FOR MOUTHS,

REQUIRING NO LUTING.

Gas Engineers are solicited to examine into the merits of this invention before erecting new or altering old retort-houses. It may be seen in action at the Alliance Gas Company's Works, Dublin, where its utility and economy will be clearly demonstrated. Although the saving in labour will be considerable, and quickly return any outlay of capital, there are other and important features strongly recommending its adoption at all gas-works, and which a gas engineer upon examination will at once appreciate.

The Directors of the Alliance Gas Company have kindly consented to give every facility to gentlemen desirous of seeing the invention in operation. Parties, therefore, about to visit Dublin will be so good as to send us their card, and we will furnish them with letters of introduction.

Drawings, &c., may be seen at our Office, and all details explained.

JOHN CHISHOLM, SON, & CO., 44, MARK LANE, E.C.

D. BRUCE PEEBLES,

ENGINEER,

FOUNTAINBRIDGE WORKS, EDINBURGH,

PATENTEE AND MANUFACTURER OF THE

NEW TONGUE & GROOVE JOINTED

WET AND DRY GAS-METERS IN TIN-PLATE CASES,

Being the only Meters yet made of Tin-Plate in which Screws are used for the whole of the jointing instead of Solder.

Gas Engineers who have not yet seen these Meters are solicited to give a trial order, and personally to take one of them to pieces and refit it, as being the short and easy way of assuring themselves of the strength and excellence of the materials, the superiority of the workmanship, and, above all, the simplicity of construction and efficient method of jointing employed.

Strength and lightness combined, with ready access to all the working parts for cleaning or repairs, which may be done by any ordinary workman, render these Meters, wet or dry, well worth the attention of Foreign Gas Companies.

Wet Meters in Cast-Iron Cases, Station-Meters, Governors, Experimenting Meters, &c.

PRICE LISTS ON APPLICATION.

J. & J. BRADDOCK,

GAS ENGINEERS,

GLOBE METER-WORKS, OLDHAM,

MANUFACTURERS OF

IMPROVED CONSUMERS GAS-METERS,

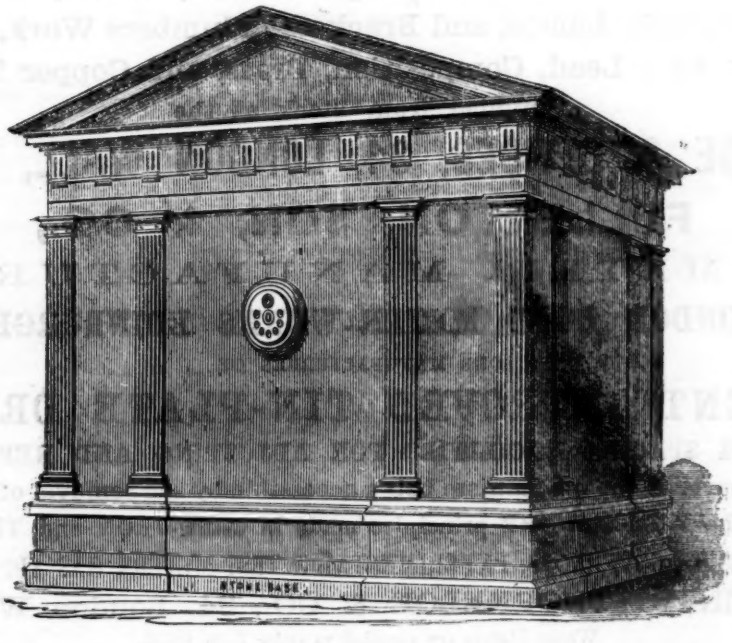
Of the Best Material and Workmanship, carefully adjusted to the requirements of the British Sales of Gas Act and Foreign Standards of Measures.

PATENT COMPENSATING GAS-METERS,

Which are uniform with the Ordinary Meters, and register with minute accuracy.

IMPROVED DRY GAS-METERS,

IN BEST TINNED IRON CASES.



GAS STATION-METERS,

ALL SIZES, WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, EXHAUST-GOVERNORS, &c.

Home and Foreign Orders promptly attended to. Terms, &c., on application.

MESSRS. J. & J. BRADDOCK

Tender their grateful acknowledgments for the past generous and extensive patronage conferred on their firm, and beg to assure their Friends, Gas Engineers, and Gas Companies generally, that every exertion will continue to be made to maintain the sterling quality of their work in every department.

Their ORDINARY METERS, WET and DRY, have now a demand over that of any other maker in the North of England; and their STATION-METERS stand unrivalled for Design, Sound Workmanship, and Efficiency.

All sizes of CONSUMERS METERS generally in Stock.

STATION-METERS, in round or square cases, on the Shortest Notice.

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34, LONDON WALL, CITY, E.C.,

GAS AND WATER ENGINEERS AND CONTRACTORS.

AGENTS FOR

MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS,

CHAPELTOWN, NEAR SHEFFIELD,

MANUFACTURERS OF

GAS APPARATUS, GASHOLDERS,

SCRUBBERS, CONDENSERS, & PURIFIERS;

IRON MAIN PIPES, VALVES, and FITTINGS for GAS and WATER;

WROUGHT-IRON RETORT-LIDS;

WROUGHT & CAST IRON GIRDERS, BRIDGES, PIERS, &c.

Wrought-Iron Tubes and Fittings for Gas, Water, and Steam; Chandeliers, Pendants, Lamps, and Brackets; Plumbers Work, Water Closets, Pumps, &c.; Lead, Composition, Brass, and Copper Tubes;

Supplied from Stock at the

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FULLERTON, SON, & CO.,

GAS-METER MANUFACTURERS,

LONDON ROAD METER-WORKS EDINBURGH,

SOLE MANUFACTURERS OF

THE PATENT IMPROVED TIN-PLATE DRY METER,

WITH SPECIAL FACILITIES FOR ADJUSTING AND REPAIR,

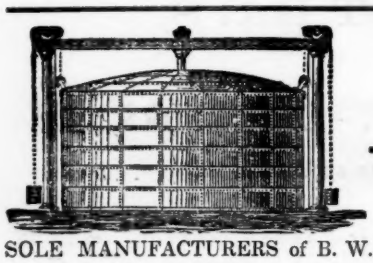
The principal parts of the mechanism being accessible by the removal of a single screw.

GAS-METERS on the WET and DRY principles made in CAST-IRON and TIN-PLATE CASES.

STATION-METERS, GOVERNORS, EXPERIMENTAL & TEST METERS, GAS APPARATUS, &c.

LONDON AGENTS: THORNELOE & CO., 34, London Wall, City, E.C.,

Where Meters are supplied to order from Stock.



IMPROVED GAS APPARATUS,

FOR CITIES, TOWNS, VILLAGES, &c.,

INVENTED AND MANUFACTURED BY

W. C. HOLMES & CO.,

WHITESTONE IRON-WORKS, HUDDERSFIELD.

SOLE MANUFACTURERS of B. W. THURSTON'S IMPROVED SCRUBBER, CONDENSER, and WASHER, in use in many of the principal Gas-Works on the Continent.

PATENTEES of the IMPROVED COMBINED PURIFYING APPARATUS, so eminently adapted for Exportation.

ESTIMATES, PLANS, and SPECIFICATIONS PREPARED for BUILDINGS and APPARATUS.

Prospectus, Price Lists, &c., on application.

LONDON OFFICES—57, GRACECHURCH STREET, CITY.

*** *Please address letters to Huddersfield.*

REFERENCES TO NEARLY 300 GAS-WORKS.

TANGYE BROTHERS & HOLMAN,

ENGINEERS, MACHINERY AGENTS, AND MANUFACTURERS,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.;

And BIRMINGHAM (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS.

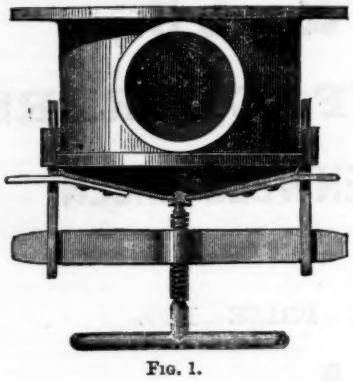


FIG. 1.

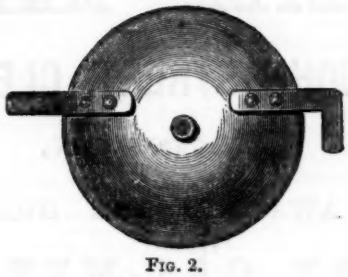


FIG. 2.

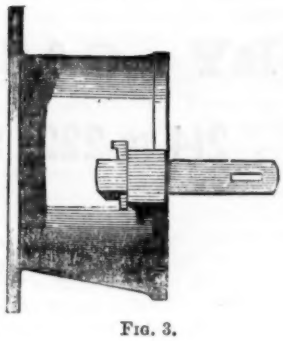


FIG. 3.

Several Hundreds in successful operation in various Gas-Works.

The expensive and cumbersome process of sealing the mouths of Gas-Retorts by means of luting the Lids with lime and other materials hitherto used for that purpose, is henceforth rendered unnecessary, and will be superseded by the very efficient method shown in the accompanying illustrations.

Fig. 1 shows a plan of a mouthpiece with Morton's Patent Lid in section. The mouthpiece is faced true, and the projecting circular edge or periphery of the lid is also turned true, and, by preference, of a semicircular section, so that the point of contact is reduced to a minimum; the convex form of the Lid rigidly sustains the force of the screw, which, by its central action, gives the Lid a uniform bearing, and effectually seals the mouth of the Retort.

Fig. 2 shows a front view of Morton's Patent Lid, which is stamped out of plate iron, having (in this case) ledges to rest on the lugs of the mouthpiece; these Lids, however, are more generally fitted to hinged cross-bars, by which means they remain suspended while the charge is withdrawn and the Retort charged, so that the damage done by throwing them about is entirely prevented.

The advantages obtained are—

1st. The sound sealing of the Retort during the whole time it is carbonizing the charge of coal, there being no jointing medium between the Lid and the mouthpiece.
2nd. The improved condition of the coke by the non-mixture of lime.
3rd. The Lid requires no preparation on the part of the stoker, beyond slightly scraping the surface to remove extraneous grit or dirt.
4th. The Lids are only about two-thirds the weight of the old form in general use, a Lid for a 16-inch mouthpiece weighing a little over 20 lbs.
5th. The Self-sealing Lid reduces labour, saves wear and tear, obviates all the inconvenience and discomfort consequent on the preparation of luting, and effects a great reduction in the working expenses. The cost attending the process of "luting" in several large gas-works, exceeds £1000 per annum, ranging in various works from 20s. to 35s. per mouthpiece.

It will be obvious that a round Lid is the most convenient and the cheapest form. D Retorts are adapted for round Lids, by carrying the bottoms down the necessary depth for that purpose, as shown in Fig 3. Some mouthpieces have been thus adapted, and are in use at the Chartered Gas-Works.

The following testimony speaks in favourable terms after ample and careful test:—

Burslem and Tunstall Gas Company, Longport, Staffordshire, Oct. 12, 1869.

Dear Sir,—In reply to your favour of the 9th inst., I have pleasure in stating that my admiration for your Patent Retort-Lid is most unqualified. I have 14 of them in use, and have tested them in the severest manner possible at these works, but without being able to detect the slightest defect. Yesterday the strap slipped off the exhauster, and a pressure of 13 inches was thus almost instantly thrown upon the Retorts, but although many of the luted Lids were leaking, not the slightest escape was observable from yours. I had anticipated that at least some greater degree of care would have been required in the scraping of the mouthpieces after the drawing of each charge, but even in this particular I find that labour has been reduced.

By every stoker on these works, as well as by myself, your Lids are regarded as a boon.

Please send me 30 more at your earliest convenience.

I am, &c., (Signed) HENRY WOODALL.

R. Morton, Esq.

Chartered Gas Company, Horseferry Road, Westminster, Sept. 15, 1869.

Dear Sir,—I have only lately returned to town, which is the reason I have not replied earlier to your inquiry.

I beg to say that I have had your Lids in use for upwards of two months, and during that time they have always kept a perfectly sound joint. I may add that where your lids are used only one set is required.

I remain, &c., (Signed) G. O. TREWBY.

R. Morton, Esq.

Chartered Gas Company, 146, Goswell Street, E.C., Oct. 20, 1869.

Dear Sir,—I have much pleasure in stating that, after some months trial of your Retort-Lids, I find them everything I could desire. I consider the plan a great improvement.

I am, dear sir, yours truly, (Signed) A. UPWARD.

R. Morton, Esq., London Gas Company.

These Lids are in successful use at the London Gas-Works, the Chartered Gas-Works, the Dublin Gas-Works, the Burslem and other Works, giving great satisfaction.

Application for Licences and other Information to be made to

TANGYE BROS. & HOLMAN, 10, Laurence Pountney Lane, London, E.C.

Sole Makers of Upward's Patent Safety Drilling Apparatus, Weston's Patent Differential Pulley Blocks, the "Special Steam-Pump," the Patent Duplex Lever Punch, &c.

THE

UNIVERSAL EXHIBITION OF PARIS,

1867.

SILVER MEDAL.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON,

HAVE BEEN AWARDED THE HIGHEST PRIZE FOR

DRY GAS-METERS,

BY THE IMPERIAL COMMISSIONERS FOR THE

UNIVERSAL EXHIBITION, 1867.

WILLIAM PARKINSON & CO.,

(SUCCESSORS TO SAMUEL CROSLEY,)

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c., &c.,

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

PATENT IMPROVED WET METER.

W. P. and Co. invite especial attention to this Meter, which entirely overcomes the difficulty to which ordinary Wet Meters are subjected, owing to the short range of the Float, which is necessary, in order to meet the requirements of the Sales of Gas Act.

"It is well known that in Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow, the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the valve instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

PATENT IMPROVED DRY METER,

Which W. P. and Co. pledge themselves to manufacture with the same quality of materials and workmanship as in their Wet Meter, thereby giving Gas Companies and others the advantage of procuring a first-rate Dry as well as a Wet Meter, which, hitherto, they have been unable to do.

STATION-METERS AND GOVERNORS,

Which can be seen at all the London Gas-Works; also at Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

TEST GASHOLDERS, EXPERIMENTAL METERS, EXHAUSTER REGULATORS,

MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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ERRATA.

SHEFFIELD WATER COMPANY'S REGULATIONS.—Mr. M. B. Jackson, a witness called for the Corporation of Sheffield on the recent inquiry before the magistrates, desires us to make the following corrections in our report of his evidence:—He did not state that he was the engineer of the Melbourne Water-Works, and consulting engineer for the water-works at Sydney, but that he "was consulted on various occasions for the Sydney Water-Works; that after they were designed by another gentleman, he suggested that there were points with regard to the engines and other things which it would be better to submit to the consideration of some practical gentleman at home, and he was happy to state that that gentleman (Mr. Hawksley) agreed with what he had stated." He did not say that because pipes had been laid for 20 years there must necessarily be a waste from them, but that, "judging from the evidence, he should say they had been." He did not say that unless pipes were laid on stone slabs or planks, so as to give them a solid foundation, a heavy weight like a steam-roller passing over them would cause a leakage from the joints, but simply "that if pipes were laid on made ground, unless they were laid upon something to give them an even bearing, that might be the result."

NOTICES.

DUNDEE NEW GAS COMPANY'S ARBITRATION.—Press of matter has hitherto prevented the publication of the evidence in this case. We propose to give it in a supplement to the next number of the JOURNAL.

The subscription to the JOURNAL is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders should be made payable at the Money-Order Office, London, to William B. King, 11, Bolt Court, Fleet Street, by whom the business department of the JOURNAL is conducted.

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All communications for the Editor to be addressed, "No. 42, Parliament Street, Westminster;" and all remittances for subscriptions or orders for advertisements to the Publisher, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING, WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, FEBRUARY 1, 1870.

Notes upon Passing Events.

M. THIERS, at seventy years of age, has been distinguishing himself by vigorously and illogically reproducing all the fallacies of Protection as they were received in France forty years ago. M. Thiers is a very consistent man; a Liberal in the abstract, he has always opposed practical progress. Of this peculiarity we find a curious illustration in the very interesting gossipping address which Mr. Vignoles—another septuagenarian—delivered on his tardy election as President of the Institution of Civil Engineers. Mr. Vignoles relates that, soon after the revolution that placed Louis Philippe on the throne of France, a powerful combination of capitalists was formed for the purpose of introducing railways into that country. Mr. Vignoles was sent over as engineer-ambassador, and had interviews with the king and his ministers. M. Thiers, then Minister of Public Works, and in command of the official engineers of the *Ponts et Chaussées*, came over to England, and was conducted over everything worth seeing in public works, including railroads, at a pace which neither the minister nor his secretary had ever seen before. M. Thiers took leave saying, "Mr. Vignoles, I think you are very clever; but I did not "believe a word of what you told me before I came, and now I "cannot see the advantage of the public works of England which "you were constantly praising. You have good canals, but very "small, and ours in France are much superior. As for your roads, "they are very good, but I have not met a merchandise waggon "on them in the whole of my journey. *I do not think railways "are suited to France.* As to your vaunted posting, we go quite "as quick in France." M. Thiers had brought over with him a lumbering French post-carriage, carrying eight or nine persons, and enormous imperials which required six horses to draw! M. Thiers returned to France, reported against railways, and, in his place in the Chamber of Deputies as Minister of Public Works, made violent speeches against them. He was, of course, supported by his subordinate officers, the official engineers. The introduction of railways into France was postponed for eight or ten years; and Mr. Vignoles might have added, when they were introduced by English engineers they encountered every possible official obstruction. M. Thiers's under-secretary was wiser; he left a staff of young engineers to study our system of macadamizing, which was afterwards closely copied. From that time the improvement in French road-making dates. The system of repairing roads by a corps of men, amongst whom all the roads are divided, with sub-officers, is now better than ours. The superior energy of England, untrammelled by a Minister of Public Works, or official engineers, is as remarkable in roads and canals as in railways. We have 160,000 miles of good carriageable roads in the United Kingdom, with a much smaller area, against barely 100,000 miles of road in France. We have 3000 miles of canals, which carried the merchandise M. Thiers did not meet on the roads; France has only 3154 miles, and yet, theoretically, the arrangements for carrying out public works are much more perfect than in England. Mr. Vignoles describes that "what in England is divided amongst the Standing Order "and other committees of the Houses of Parliament, by some "department or other of the Board of Trade, the Custom-House, "the Ordnance Survey Office, the Hydrographical Branch of the "Admiralty, the Trinity Board, the Woods and Forests, the "Board of Health, by county, city, and borough surveyors, and "by innumerable local officers throughout the United Kingdom," is all vested in France in the "Ministry of Public Works," which also exercises "duties and functions which we have no "thought of creating."

The *Corps des Ponts et Chaussées* is the most important branch of the Ministry of Public Works. The agricultural branch looks after the details of statistics as to cultivation, the supervision of numerous breeding establishments and model farms, veterinary schools, and Chambers of Agriculture; also the inspection of sea-bathing places, mineral water springs, and sanitary affairs in general. This is the branch Mr. Thomas Acland, M.P., was kind enough to propose for our imitation, with himself as first Minister of Agriculture. The commercial branch attends to assurance companies, to the valuation of custom-house entries, and to the management of every mercantile port, from Marseilles and Bordeaux to the smallest fishing village; attends to arts, trades, and manufactures, with other duties of the most miscellaneous character, including the regulation of produce and exchange brokers, who pursue their calling by favour of Government. The engineering branch inspects and controls every railway, canal, and navigable river, whether in progress or completed; also all manufacturing establishments worked by steam or water; all mines, quarries, and collieries; and all steam-engines, stationary or locomotive. A special branch manages all lighthouses. All roads are constructed and repaired under its control. It supervises the school of the *Ponts et Chaussées*, and all schools connected with engineering—the School of Mines, the School of Arts and Manufactures, and the engineering course of the *Ecole Polytechnique*. Finally, it has to report upon every concession demanded for any object, previous to its presentation, through the Minister of State, to the Crown. In this capacity it first reported against the introduction of railways into France; and years after, when they were made, hampered the constructors by the most absurd restrictions. In 1843 all the science of French engineers could not design a skew bridge. To keep this enormous machine in working order, there are in Paris thirty-two *bureaux*, each with its staff, of which one-half are devoted to public works. There is a staff of engineers for each department, for every great town, for every railway and canal—all educated on one model, and taking grades from one head. For public works there are 877 engineers, in eight classes; in the whole, over 5000 *employés*. The *Ecole des Ponts et Chaussées* has 15 professors, 8 teachers, and 30 other persons on the staff, but only 55 pupils. The *Ecole des Mines* has 16 professors,

8 teachers, a large staff, and at present only 9 pupils. To manage the streets of Paris there are 16 engineers, of all classes, and 152 "conductors," who have charge of the public streets, roads, foot-pavements, promenades, plantations, water supplies, and sewerage. They are paid by the municipality of Paris, but appointed by the minister. The engineers of the *Corps des Ponts et Chaussées* are highly educated scientific gentlemen. They are all mathematicians; but for practical work they are compelled to rely on the conductors of works, who are like our corporals, sergeants, and sergeants-major in the army, upon whom (before the Crimean War) depended nearly all the work of fashionable regiments, with the assistance of the commanding officer. These conductors never rise beyond the rank of sub-engineer. One of the most successful engineers of the Suez Canal, after receiving the complete scientific training of the French schools, finished his education in the workshops of England. An annual directory, bulky as our Army List records the names, ranks, stations, and addresses of nearly 6000 persons under the direction of the Minister of Public Works; the work of each *bureau*, or commission, is defined; everything that has to be done, or is doing, is inspected or controlled, *but there is no record of works executed.* Mr. Vignoles concludes this interesting section of his address by stating that "this system of control in all matters of engineering "has been adopted, more or less stringently, by every Government "in Europe. I have had to encounter it in France, Spain, "Switzerland, Holland, North and South Germany, Russia, "Austria, and Italy, and in its most annoying and mischievous "form in Brazil. The system is a constant source of annoyance "to Englishmen." From this contribution to our knowledge of foreign legislation on public works we may gather some valuable hints, especially likely to be useful to the Government of India. We may envy the middle classes of France the use of such a valuable educational machine as the *Ecole Polytechnique*, where the best possible preparation is given for the practical labour of those intended for civil engineers, architects, mechanical manufacturers, mine owners, and masters of machinery of any kind, but we have no reason to envy France the system which creates a complete hierarchy of scientific officials, trained to one routine system, and with a truly military feeling of contempt for all outsiders. It is, or was, the boast of the French that every private soldier carried in his knapsack a marshal's *bâton;* but this prospect of promotion to the highest rank does not extend to the pursuit in which practice must be combined with science. The French system absorbs the prime intellect of the country in an official and routine career, and condemns to perpetual subordination the conductors and sub-engineers, to whom is entrusted the execution of work planned in the study of the theorist. Nearly all our greatest and most original mechanics and engineers have risen from the ranks. Had a body of official engineers existed, neither Brindley nor George Stephenson could have penetrated its serried disciplined and educated army. Telford was a great engineer, but he was the bitter opponent of railways; in fact, by his journeys on the road-engines he almost sacrificed his life to his opposition to the rail. It was natural he should view with aversion the constructions destined to reduce his splendid roads to insignificance. Had England been ruled by a corps of official engineers, when the time came for railways, either Mr. Telford or Mr. James Walker must have been the chief of the establishment, and we know what would have been the character of their reports. It may safely be said that, as a rule, the worst use which can be made of a very clever original-minded man is to put him into Government employment. Of course, we are not speaking of a political or diplomatic, but of a practical career. The trained engineers of France have not only failed to make any important contribution to steam work on sea or land, but they have not produced a success in iron ships or heavy artillery. As to the Chassepot, it is known to be a mechanical failure from its delicate and complicated structure. The education of the workshop, and of work of the mine and the colliery, should be closely associated with all of science that schools can teach.

The circular which created so much indignation amongst our engineers has been explained to have been written entirely in a Pickwickian sense, in the following letter:—

To Charles Hutton Gregory, Esq., President of the Council of the Institution of Civil Engineers.

Fort William, Nov. 29, 1869.

Sir,—I am directed to acknowledge the receipt of your letter, dated the 28th of October, to the address of his Excellency the Viceroy and Governor-General, forwarding copies of papers laid before the Secretary of State for India by the council of the Institution of Civil Engineers, relating to a notification recently issued, prohibiting the receipt of commission by officers employed in India in the public works department. You request his Excellency's consideration of the subject referred to in those papers, as being one vitally affecting the honour of the profession of civil engineers.

It has been a subject of much regret to the Governor-General in council that serious misunderstanding of the intention of this notification should have arisen among civil engineers, both in this country and in England. His Excellency in council, when informed that misconceptions had occurred, lost no time in issuing a circular order to explain the object and origin of the notification, and to assure the civil engineers in the service of the Government in India, that nothing had been further from the intention of the Governor-General in council than to impute unworthy practices to the profession. A copy of this circular is annexed.

His Excellency in council most fully accepts the declaration made by the Council of the Institution of Civil Engineers of the principles which are recognized by the profession in relation to the payments they receive for their services, and he desires to add that there has never been any doubt on the part of the Government of India on this subject, and that the notification specifically and exclusively referred to the receipt of commission which was a *legitimate* source of emolument, as being a recognized practice. This is in precise conformity with the declaration of the council in your letter to the Duke of Argyll, dated the 27th of October last, and it is a matter of concern to his Excellency in council that any other impression should have been conveyed by the manner in which the notification was expressed.—I have, &c.,

(Signed) R. Strachey, Colonel R.E.,
Secretary to the Government of India.

A copy of a circular, addressed to all the Governments of India and all the public works departments, couched in the same sense, was enclosed in this apology. The President of the Institution of Civil Engineers, who might have replied in the words of the play—

> It is true that you might have dissembled your love,
> But why did you kick me down stairs?—

with much dignity, however, wrote:—

25, *Great George Street, Westminster, S.W., Jan.* 19, 1870.

My Lord,—I have the honour to inform your Excellency that Colonel Strachey's letter of the 29th of November, 1869, with "Circular No. 84, Public Works," was laid before the council of the Institution of Civil Engineers at a meeting held yesterday.

I have been requested by the council to acknowledge on their behalf the assurance conveyed in Colonel Strachey's letter, "that nothing had been further from the intention of the Governor-General in council than to impute unworthy practices to the profession," and that "His Excellency in council most fully accepts the declaration made by the council of the Institution of Civil Engineers of the principles which are recognized by the profession in relation to the payments they receive for their services."—I have, &c.,

Charles B. Vignoles, President.

To His Excellency the Earl of Mayo, G.M.S.I., K.P., &c.,
Governor-General of India.

And there the matter rests officially. Fortunately, we are afforded more insight into the questions between the Government of India and engineers, in a letter addressed to the Secretary of State for India, by Mr. Bourne, C.E.—a letter which would have been ten times as effective had it been reduced to short, crisp, clear paragraphs, which could be quoted. Mr. Bourne believes, and says plainly, that the obnoxious circular was issued under the influence of military engineers, jealous of the abilities and angry at the claims of the civil engineers for better pay and a better position. "Civil engineers," he says, "have been treated in India as if "they were the Pariahs of the service. Military officers, without "special training or engineering experience, have been rated as "their equals in the conduct of public works, and placed far "above them in pay, position, pension, and promotion." The natives believe that civil engineers belong to a *caste* inferior to the military. Mr. Bourne goes on to state roundly "that "there has been a *military conspiracy against civil engineers.*" Military men direct the public works department with little knowledge, but most power and profit. They are endeavouring to reduce the experienced civil engineers to the condition of the *conducteurs* in the French system. "A true engineer," says Mr. Bourne, rising almost into eloquence, "is not a servile copyist, but "a man who, using his experience to carry him through ordinary "tasks by ordinary means, shall be capable of selecting such "expedients and methods as are best adapted to the circum-"stances of the particular work in hand, and even of contriving new "if none suitable already exist." He proceeds to quote examples from his own experience. Thus, in 1847, Mr. Bourne proposed that the first East Indian railway should, instead of ending in a jungle, be carried to Mirzapore on a single line, or not made at all. The engineer officer who represented the Government caused the line to be carried to Rajmahal, where it was exposed to the competition of the Ganges water-way, and out of the direct line to Mirzapore; extended to Mirzapore, it formed an arc. A third line has since been constructed, and two lines instead of one. Again, as a grand trunk road passed from Calcutta to Mirzapore—an embankment all the way—an embankment which had been improved until it stood the influence of inundations, and, with the exception of three or four rivers, had been bridged; as the gradients, except at one point, for five or six miles, were almost a dead level; and as it was of superfluous width for the existing traffic, Mr. Bourne suggested that the railway should be laid down upon one side of the existing road, with an easily constructed impervious fence between the other side, retained for ordinary traffic. The cost of this road, 450 miles in length, was estimated at £2,100,000, with about half a million for rolling stock and tools. This plan was approved by the engineers engaged on the line. It was, however, rejected by the superior military powers, in favour of a plan less efficient and more than twice as costly.

Mr. Bourne also claims to have introduced a new class of steamboats or rafts for carrying merchandise on Indian rivers, now universally adopted, although the first model was peremptorily condemned by an Indian military engineer—General Forbes.

We all remember Colonel, now General, Sir Arthur Cotton, who, in successfully advocating extended navigable and irrigation canals, went to war with East Indian traditions, and, strange to say, while benefiting India, made his own professional fortune. A worthy and intelligent gentleman, he was so prejudiced in favour of his own hydraulic theories, that he set himself against the introduction of the railway system, which has so effectually "ripped up India;" and, had his power as an engineer-in-chief been equal to the sincerity of his convictions, our Indian empire would be now enjoying the benefit of much irrigation, and many canals, and many common roads, but no railroads; and, consequently, after the mutiny, there would have been no Indian empire to preserve. Sir A. Cotton has proposed a dam across the Ganges, below Bhagarutty, with the view of improving the navigation, and making the depth of water equal throughout the year. But Mr. Bourne maintains that this would be an inefficient and very dangerous expedient, "very costly to execute, very costly to prevent the river from leaving the dam. His plan to construct a "short paved canal, which, starting from the rocky part of the "bed where the river rounds the points of the Rajmahal Hills—"where the bed of the river is permanent—would debouch in the "Bhagarutty, so as to make its depth adequate for navigation "throughout the year." But in this, as in many other cases, he found it impossible to penetrate the thick hide of routine officialism. "The works executed in India by military men, before "the construction of railways introduced the skill and experience of modern engineering, were, with few exceptions, few in "number, poor in design and execution; the native idea generally "shining through a thin varnish of European art, elaborated "from books. Instruction has come in an inverted order—the "native foreman instructing the local superintendent, he in his "turn instructing his local superior! In the railway works "this was for the first time reversed, and Indian works "ceased to resemble those of a promising country amateur, who "had called the village bricklayer and carpenter to his aid in "carrying out a work on the pattern of one shown in some cyclo-"pædia." Future railway works will be best executed in India, not by discarding the services of "guaranteed companies which "have acquired valuable experience, but by making the best "bargain possible for the public, and limiting the guarantee, as "foreign Governments do, not to the actual, but to the estimated "cost." An offer to execute a great irrigation work in the Punjaub, after the plans had been approved by the Punjaub Government, was rejected because the Supreme Government has decided to carry out all public works itself—"an impossible achievement." At any rate, "the works should be executed by con-"tract;" executed by day labour, under the direction of Government engineers. There will be no check on the cost, the time of execution, or the efficiency. It is difficult to resist the tendency of the managers of Government works to magnify their own importance by magnifying the works at public expense. One of the most costly works ever published, records, at the expense of the Indian Government, the execution of the Ganges Irrigation a failure! Military men will be most useful with their regiments, directing them in the construction of roads and works of strategical importance, and which the troops would execute to the improvement of their health and *morale*. There are, of course, some clever engineers amongst military men, especially those trained in the Punjaub (under the Lawrences?), where, as a rule, the officials, unlike those in other parts of India, are laborious, courteous, and anxious to improve the country by every means in their power. Civil engineers may now be found, who have been resident many years in India, well acquainted with the language and habits of the natives. The ignorant pride and haughty obstructiveness of the Bengal civil service has long been a grievance with merchants and planters; they will now find allies in the civil engineers. The day has gone by when the Bengal official could maintain that the principal use of India is to constitute a preserve for the Indian service. An inquiry will be made why European settlers who are attracted to the Southern States of America, Peru, Chili, Brazil, and all kinds of tropical climates, are repel led from India, though many districts enjoy a climate as cool as that of England?

THE METROPOLITAN BOARD OF WORKS AND THE WATER SUPPLY.

After five days discussion, a majority of the Metropolitan Board of Works have signified their belief that it would be to the advantage of the public if the Board were to take the water supply of the metropolis into their hands. Another discussion is yet to follow, but it is hardly probable that the resolution already carried will be rescinded; and we may take it for granted that a deputation from the Board will shortly wait on the Home Secretary, and announce to him their willingness to purchase the water companies if Parliament will give the necessary sanction. At the present moment it is very unlikely that Parliament will do anything of the sort. Pending the complete municipal organization of the metropolis, which will no doubt occupy the attention of the Legislature for some years to come, it is highly improbable that a transaction of such transcendent importance would be confided to a body who cannot be supposed to enjoy more than a transitory existence, and which, moreover, can hardly be said to possess the complete confidence of their constituents. The circumstance that this discussion—the most important the Board ever entered upon, as every speaker asserted with wearisome iteration—failed to bring together two-thirds of the members, is a fact that will no doubt attract the attention of the ratepayers, who are already beginning to express their dissatisfaction at the decision of the Board. The Marylebone Vestry and the Limehouse District Board of Works protest, and for the next few weeks we have no doubt the Board will have to receive protest after protest from all parts of London.

It is true that, by adopting the resolution of Mr. Freeman, the Board stands committed to nothing, and so, in point of fact, indefinitely postpones any practical result; while, on the contrary, if either the amendment of Mr. Shaw or that of Mr. Roche had been carried, the Board would have stood pledged to immediate action, which would in good time have brought about the change from an intermittent to a constant supply of water. This simple and practical result, however, is not enough for the majority of the Board, who flatter themselves that they are far more able to superintend the change from one system to another than the companies, and therefore would postpone the change until they become the owners of the supply. We believe the policy of the Board to be shortsighted. An Act to carry out the policy recommended by the select committee of the House of Commons (1867), we think, could be obtained at once; but the purchase of the companies will inevitably be deferred for years. We are far from thinking that the water supply of the metropolis will never be vested in a municipality; but we regard it as extremely improbable that it will ever be confided to the Metropolitan Board of Works.

If we look to the object of the change, we can find but one—to procure a constant supply. None of the speakers seemed to think that the supply was likely to be cheaper, at all events, for a generation to come; while some contended, and with reason, that it was likely to become considerably dearer. On this point, however, it is impossible, with the information now at hand, for the Board to arrive at any satisfactory conclusion. We must, therefore, defer the consideration of this most important part of the subject.

The advantages of the change to a constant supply of water are no doubt great, but they may be over estimated. To begin with, a constant supply is much more intermittent than the members of the Board of Works suppose. Mains and pipes, especially when under great pressure, need frequent repairs, and consumers would have to accustom themselves to having their supply shut off one or two days every week, which, if cisterns were abolished, would result in great inconvenience. Then the great demand for water in London is confined to a few hours in the morning. This sudden demand is supplied by cisterns, but, if the use of these were discontinued, larger mains and service-pipes would be required all over the metropolis, or the higher districts and upper floors of houses would be found without water when they most needed it. Then it may be positively asserted that the fittings of every house must be replaced, or an enormous waste of water, and the frequent flooding of the premises would inevitably result from a change to the constant system at high pressure. It is true that these contingencies might be avoided by placing a tap outside each house, so that the occupier might fill his cisterns at will; but in these days there is a sanitary crusade against cisterns, and one object of the change is to secure their abolition. Looking at all these circumstances, we cannot but conclude that even the change to a constant supply would have to be effected very gradually, and that some years must elapse before even this desirable result can be generally arrived at.

One statement of the Royal Commission, that Parliament could never confer on a private company the powers of internal inspection which would be necessary to prevent waste under a constant supply, may be disposed of in a few words. Parliament does regularly, and without hesitation, confer on gas companies all the powers of inspection a water company would require, and consumers do not at all object to the exercise of them.

In conclusion, we may call attention to a very temperate letter from Mr. Whiffin, the secretary to the West Middlesex Water Company, which, we have no doubt, fairly expresses the opinions held by all the metropolitan companies. There is no objection on their part to a constant supply, with adequate guarantees against waste; but we feel assured the London public would be very disinclined to give up their cisterns. It seems to be assumed that Parliament would give the Metropolitan Board the same unlimited powers of rating which the Corporation of Manchester possess. But this is by no means certain; and even if the general

rate were limited to 3d., the project would encounter great opposition in large districts like Islington and Clerkenwell, where the general rate at present only amounts to three-farthings.

Circular to Gas Companies.

On the first of last month the supply of 16-candle gas became obligatory on the Chartered, City of London, and Great Central Gas Companies, under the City of London Gas Act, 1868. This obligation, we are informed, has been very satisfactorily fulfilled, the quality of the gas supplied having often considerably surpassed the required standard. Much satisfaction is expressed by consumers in the City at the improved quality and concomitant reduction in price, and it may now be hoped that there is an end of all complaints so far as illuminating power is concerned. It only remains for the referees to fix without delay the conditions of purity, and there can be no reason why the most perfect accord should not subsist between the Corporation and the companies supplying the City.

The referees, we hear, have temporarily withdrawn the certificates from the City testing-stations, and the testings are for the time suspended, the object being to give time for the verification of the instruments. It seems probable, too, that some modification of the burner and accessories may be adopted, by which it will be made more adapted for testing gas of high illuminating power.

The Imperial and South Metropolitan Companies Acts also came into force on the 1st of January, with results which seem to have elicited equal satisfaction; and, on the whole, it may be said that the gas supply of the metropolis was never in a more satisfactory state than at the present time.

The Metropolitan Board of Works have as yet taken no step towards the appointment of examiners under the two last-named Acts, which is a matter of surprise, considering the time which has elapsed since they passed. No doubt the Board can give good reasons for the delay; but, at the same time, it looks like shirking the duty imposed on them by Parliament, and neglecting the interests of their constituents.

The approach of the period when, under the Sales of Gas Act and its amending Acts, the use of unstamped meters becomes illegal in the counties of Gloucester and Carmarthen, and in the several boroughs in England, Wales, and Ireland that have adopted that Act—although many of them have not yet provided inspectors and machinery for carrying the Act into operation—renders it advisable to remind all gas companies concerned that, by the 13th of October next, all meters used in their districts must be stamped, under a penalty of £5 for every one unstamped, and inability to recover the value of any gas supplied through it. In Scotland the case is somewhat different, as a subsequent Act—applicable to Scotland only—has been passed, giving the authorities power to adopt the Act at any time (which in England and Ireland could only be done before a certain date), and making the ten years allowed for stamping meters take date from the adoption of the Act by the local authorities.

Some important points of practice under the Standing Orders of Parliament with respect to notices have been recently decided by the examiner, which it may be well to notice. The 19th Standing Order of the House of Commons requires that in the months of October and November, or either of them, immediately preceding the application for a Bill, notices shall be published once in the London, Edinburgh, or Dublin *Gazette*, as the case may be, and on three *successive weeks* in some one and the same local newspaper. The Lynn Gas Company's Bill was opposed by the promoters of the Consumers Company, on the ground that the third notice was published in a special edition of a local newspaper, on Tuesday, Nov. 30, instead of in the ordinary weekly edition which is issued on a Saturday. The contention of the promoters was that the spirit of the Standing Order required a week to elapse between each publication; but the examiner ruled that the notice of Nov. 30 was a good notice, inasmuch as it complied with the strict reading of the order, which only requires the notices to be published in separate and successive weeks, and he allowed the Bill to proceed.

The Bill of the old Aberdare Gas Company was opposed by the new company on the ground that the notices had only been published in the *Aberdare Times*, a paper printed partly in London and partly in Aberdare, and with a circulation confined almost to the parish of Aberdare; and it was contended that, inasmuch as the proposed new works will extend beyond the parish, it was necessary that the notices should have been published in some newspaper printed and circulated in the county of Glamorgan. The examiner, however, held that the order had no reference to where a paper was printed, but only to where it was published; and since Aberdare was in the county of Glamorgan, the publication must be held to have taken place in that county. Other objections having failed, the Bill was allowed to proceed. The gas Bills of the Sheffield Corporation, and the Belfast Consumers Gas Bill, are to be opposed on Standing Orders.

The Town Council of Lynn have discussed the advisability of purchasing Mr. Malam's gas-works, and have decided against it by a majority of 13 to 3. They have, however, determined to make efforts to get a clause inserted in the Bill of the Lynn Gas Company, to give the council power to purchase the undertaking at any future time if they should think fit. There is at Lynn a sort of *imperium in imperio*, in the shape of a body called "Paving "Commissioners," who seem to be endowed with very wide powers. This body, which the local press regards as "mori-"bund," but to which the Bill of the Consumers Company would also give the power of purchase, has, as yet, made no sign of an inclination to embark in the manufacture of gas; and the promoters of the rival Bills will probably have to fight out their case alone.

In the management of commercial undertakings it must be confessed that Corporations labour under one unpleasant disadvantage. All their proceedings must necessarily be public; they cannot take the first Napoleon's advice, and wash their dirty linen *en famille*; and everybody knows how advisable, not to say necessary, it sometimes is for the interest of all parties that some proceedings should be private. If we take the dispute between the Carlisle Gas Committee and their late manager as an illustration, we need not pronounce any opinion on the conduct of either of the parties concerned. The chairman of the committee may be the most amiable and forbearing of men, and the late manager himself most unmanageable, but every one will see that a dispute of this kind between employers and employed is not a matter for public discussion. This was probably strongly felt by some in the course of the debate we report in another place; but the reporter was inevitable, and hence no little amusement for our readers. They may, perhaps, sympathize with the chairman in his difficulties with a manager who preferred to prepare returns for a hostile newspaper rather than for his employers, and insisted on having letters addressed to somebody else; they may condole with him on the loss of the former manager, of whom Death so cruelly robbed the Corporation of Carlisle; they may share, too, his surprise that retorts should be left charged for 20 hours on Sundays, either to save labour or to allow the men to go to church if disposed; but they will laugh at him none the less. His position, however, is a trying one. He has undertaken a task with no special qualifications for it, and is conscientiously endeavouring to do the best for his fellow-citizens. What can he do but find fault? and quite right, too, if deserved. Possibly, however, the citizens of Carlisle will have seen enough of combined amateur and professional management of their gas-works, and may begin to think that an inexperienced and changing body like a "Gas Committee" is not best adapted to superintend a manufacture requiring much skill and special knowledge. And in the end they may come to the conclusion that the best course would be to employ a first-class man, pay him liberally, and hold him responsible for the proper and remunerative working of their undertaking. Few, we imagine, will envy the new manager his success at Carlisle.

We must draw especial attention to a decision in the Court of Exchequer, reported in another column, in the case of *Burrows v. The March Gas Company*. The action arose out of an explosion which took place on the plaintiff's premises, in consequence of an escape of gas from a defective service-pipe supplied by the company. The ignition, however, was caused by the stupidity of an ironmonger's (and gas-fitter's, we presume) man, who was searching for the leak with a lighted candle. The court, it would appear, held the company responsible for the damage, because the man whose carelessness produced the explosion was not the servant of the plaintiff. This decision, it will be seen, considerably extends the acknowledged responsibilities of gas companies, and suggests the exercise of the utmost vigilance when new supplies are laid on.

The value of coal tar is likely to be considerably enhanced by the manufacture of artificial alizarine, which is rapidly becoming an important industry, and threatens to drive the natural product from the market. The basis of this manufacture—or perhaps we should say the starting-point of the transformations by which alizarine is eventually produced—is anthracene, one of the ingredients of coal tar. It passes over in the distillation, and remains with the dead oil, from which it is separated by fractional distillations. After the separation of the anthracene, the dead oil is just as valuable for all the purposes to which it is ordinarily applied.

After an agitation which has extended over twelve months, it has been decided by the Southport Town Council to remove the gas-works out of the town. The council have further resolved to erect new works at Crowlands, about a mile and a half from the town, the present works to be used until the new undertaking is completed.

Legal Intelligence.

COURT OF EXCHEQUER.—Tuesday, Jan. 18.

(*Sittings in Banco, before Lord Chief Baron* Kelly, *and Barons* Martin, Channell, *and* Pigott.)

BURROWS *v.* THE MARCH GAS AND COKE COMPANY.

This was an action tried by the Lord Chief Justice at the Cambridgeshire Summer Assizes, and which resulted in a verdict for the plaintiff—damages £400.

The nominal plaintiff is a grocer in the Isle of Ely; the virtual plaintiffs being the London, Liverpool, and Globe Insurance Company. The action was brought to recover damages for the almost total destruction of Burrows's shop and premises through an explosion of gas caused by the defective state of the service-pipe, and which had been supplied by the defendants. The defendants company is upon a limited scale, and had been recently started for the purpose of supplying the locality with gas. Burrows, requiring extra gas for his shop, called in one Bates, an ironmonger, to consult him as to the requisite arrangements, and Bates having placed himself in communication with the company, the additional gas was let on, and a new meter-pipe was supplied, and the position of the meter altered. On the day the gas was let on, the people in the shop perceiving a very strong smell of gas, search was made to ascertain where it was escaping, and a man of Bates's, named Sharrad, was employed to make the search. The floor having been lifted up to examine the pipe, Sharrad approached the aperture with a lighted candle in his hand; but before he got to the spot a terrible explosion took place, and Sharrad and the whole of the front shop were driven over to the other side of the roadway, some 50 or 60 feet across. It was under these circumstances the action was brought. A rule *nisi* having been obtained on behalf of the gas company to enter a verdict for them upon the ground that, although the meter-pipe was defective, still that its laying down had been supervised by Bates, and really that the immediate cause of the accident was the negligence of Bates's man in searching for the place where the escape was taking place with a lighted candle in his hand.

Mr. Keane, Q.C., and Mr. Merewether appeared for the plaintiff, in opposition to the rule; and Mr. O'Malley, Q.C., and Mr. Graham for the defendants, in support of it.

The Court held unanimously that the verdict ought not to be disturbed. The jury found that the pipe which had been supplied by the defendants was in a defective state; and although Sharrad, Bates's man, was guilty of negligence, still he was not the servant of the plaintiff, and, consequently, the plaintiff was not responsible for his *laches*.

Rule discharged accordingly.

Miscellaneous News.

CARLISLE TOWN COUNCIL.

ELECTION OF A GAS MANAGER.

At the Monthly Meeting of the Carlisle Town Council, held on Tuesday, Jan. 11, in the Town-Hall—W. I. R. Crowder, Esq. (the Mayor), in the chair,

The Town-Clerk read the following resolution carried at the last meeting of the council:—

That, with every desire to pay proper deference to the wishes of any portion of their fellow-citizens, this council must decline to accede to the prayer of the memorial just presented, to rescind their former minute, as this council is firmly of opinion that Mr. Porter is not capable of managing the gas and water works in a satisfactory manner, and that it would be a manifest dereliction of public duty to continue him as manager.

The mayor handed to the town-clerk the resolutions carried at the meeting in the Athenæum, on Friday night; also the memorial referred to, which had been sent to him by Mr. Brockbank. The following is the memorial:—

The undersigned gas consumers and ratepayers of Carlisle respectfully ask the council of the city to take into account the following facts when Mr. G. Porter's application for the post of manager of the gas and water works again comes before them, viz.:—

That he has been fully acquitted of having had any fraudulent intentions in the "irregularities" alleged to have taken place in the works.

That he has expressed his regret at these "irregularities," which in no respect have impaired the efficiency of any department in the works, and have resulted in no loss to the ratepayers.

That he has also, in the clearest possible terms, expressed his wish to comply with the instructions of the Gas Committee, and he "has no wish or interest to forfeit their esteem."

That many of the "irregularities" complained of consist of charges made by interested parties, and are of a purely personal character, having their origin chiefly in trade jealousies, and having nothing whatever to do with the interests of the ratepayers.

That most of these so-called "irregularities" have been successfully rebutted.

That Mr. Porter has proved himself to be painstaking and indefatigable in his superintendence of the works and of the extensions about being completed, which must have thrown such an undue pressure upon his time as quite to account for some of the petty irregularities complained of.

That a frequent change of managers is disastrous in its effects, and that no evidence whatever has come to light to show that Mr. Porter's management has been a disadvantage to the ratepayers.

For these reasons your memorialists respectfully submit that it will be for the interests of the city that Mr. Porter should be reinstated in his post of manager of the gas and water works.

Mr. Cockburn: The signatures number between 1400 and 1500.

Mr. Hardy said Mr. Porter had called upon him that morning, and asked him to hand to the council a statement of his with respect to an investigation being conducted by the Gas Committee, respecting some accident at the works which had been very much talked about. If the council would allow the statement to be read, he should be very much obliged. Mr. Porter had also prepared a diagram, as a guide to the uninitiated who did not know much about the matter. The diagram was exceedingly simple, and any one could understand it. Mr. Hardy here handed to the town-clerk the statement and accompanying diagram.

The Town-Clerk then read Mr. Porter's statement, as under:—

To the Mayor, Aldermen, and Councillors of the City of Carlisle.

Gentlemen,—I beg respectfully to submit to your consideration the following correspondence and explanations as to the stoppage which occurred at the gas-works on the 8th of December last:—

"26, *Castle Street, Carlisle, Jan.* 7, 1870.

"Dear Sir,—I am instructed by the sub-committee for the interim management of the gas-works, pending the appointment of a manager, to intimate to you that an investigation has been set on foot as to the cause of the stoppage of the works on the 8th of December last, and I am directed to inquire, with reference thereto, whether you have anything further to add to your report presented to the Gas Committee on the subject, and also whether you will be ready to answer any questions which the persons appointed by the Gas Committee to conduct the investigation may desire to put to you. The investigation is being proceeded with to-day, and you may be required to attend at the gas-works at three o'clock this afternoon, or as near that time as may be, if you will be in attendance at the gas manager's house at that time, in case you should be sent for. If you are at home, the bearer will wait for an answer; otherwise I will thank you to send an answer to me by two o'clock to-day.—I am, &c.,

"J. Nanson.

"Mr. G. Porter, Gas Manager's House, Gas-Works, Carlisle."

"*Mill Street, Carlisle, Jan.* 7, 1870.

Dear Sir,—It would give me the utmost satisfaction to have the cause of the stoppage of gas on the 8th of December last properly investigated, and I am only sorry that Mr. Hough, my legal adviser, should be from home till Sunday night or Monday morning. The committee, I trust, will see the propriety of my being accompanied by Mr. Hough. Of course the committee will not object to Mr. Hough examining others as they propose to do with me. May I request Mr. Irving to return to me the drafts of minutes of evidence I lent to him, under promise of return, some time to-morrow, and in the meantime he may have them copied for his own satisfaction. As Mr. Hough may not be here until Monday morning, I hope the committee will arrange for a meeting on Monday afternoon, of which please inform me to-day, and I will write to Mr. Hough, so as to arrange for his attendance.—I am, &c., ——— "George Porter.

"J. Nanson, Esq."

"*Town-Clerk's Office*, 26, *Castle Street, Carlisle, Jan.* 7, 1170.

"Dear Sir,—I am directed by the Gas Committee to inform you, in reply to your letter addressed to me asking to have the inquiry as to the cause of the stoppage of the gas-works postponed to Monday next, to enable Mr. Hough to be present on your behalf, that the committee cannot comply with your request to allow Mr. Hough to be present. The two gentlemen (gas managers from a distance) engaged in the inquiry will be in attendance at the gas-works to-morrow (Saturday) morning, at ten o'clock, and will be ready to receive from you any statement you may have to make, in writing or otherwise, and will be prepared to put certain questions to you if you choose to present yourself before them for examination; and I am directed to give you notice of this to-night, which I accordingly do. No legal gentlemen will be present.—I am, &c.,

"John Nanson, Town-Clerk.

"Mr. George Porter, Gas Manager's House, Gas-Works, Carlisle."

"*Mill Street, Carlisle, Jan.* 7, 1870.

"Dear Sir,—The sub-committee having objected to the terms of my reasonable proposals, contained in my previous letter of to-day, for meeting them, I must decline attending upon them at their *secret* and *ex parte* (so-called) '*investigation*.'

"Having every desire to give the most ample information respecting the cause of the stoppage of the gas on the 8th of December last, I shall draw up a full report of the particulars, and present the same to the Town Council at their meeting on Tuesday first.

"The sub-committee will please understand that I have further particulars to state than those named in the hurriedly written report referred to in your first communication of to-day.—I am, &c.,

"J. Nanson, Esq., Town-Clerk, Carlisle." "G. Porter.

"*Gas-Works Office, Carlisle, Jan.* 8, 1870.

"Sir,—I am directed by the sub-committee for managing these works *pro tem.* that the gentlemen conducting the inquiry into the accident that occurred on the 8th of December last are prepared, between now and one o'clock, to receive any evidence that may be tendered by Mr. George Porter, jun., touching the said accident.—I am, &c.,

"Mr. George Porter, sen." "John Armstrong.

"*Mill Street, Carlisle, Jan.* 8, 1870.

"*To the Sub-Committee of Management.*

"Gentlemen,—Please correct my son's evidence by inserting the word 'purifier,' omitted before valve in the draft I left with Mr. Irving. The sentence as corrected will read thus:—'Owing to the extreme stiffness of the last purifier-valve, which had to be closed.'—Yours, &c. "G. Porter.

"Gas-Works, Carlisle."

There are 4 oxide of iron purifiers, consisting of 4 boxes or chests, each having an area 14 feet square, and fitted with 4 tiers of trays or sieves, upon which is placed the oxide, through which the foul gas is passed for the purpose of removing the sulphuretted hydrogen and cyanogen which it contains. These purifiers are wrought in pairs.

The boxes first put into operation were Nos. 3 and 4, and subsequently Nos. 1 and 2. On the 8th of December ult. these two latter were working, each charged with 2 tiers of oxide of iron, each 15 inches in thickness. This depth of oxide with which the first 4 boxes were charged was found to require too high a pressure, and I accordingly gave directions to use 4 tiers, each having 5 inches depth of oxide at the most; thus reducing the total depth from 30 to 20 inches, and further diminishing the resistance by reducing the compactness of the material.

The pressure arising from the greater depth of oxide employed, and the period over which it had been used—the newest charged having been wrought for eight or nine days—made it a matter of much anxiety with me to have other purifiers ready to set on in the place of those too heavily charged. Considerable delay occurred in effecting this, through causes over which I had no control. I had fully expected to have had the No. 3 box ready with the reduced charges by noon of the 8th of December ult., and in that case it would have been put on during daylight, as I have generally done and desired. Shortly after the men's return from dinner, I directed them to have this box completed. This took them towards night.

About 10 or 15 minutes after six o'clock of the same day, and immediately after tea, I went with my son to change the purifiers. For this object I then obtained the key and got the engineman to trim two Davy lamps, and supply me with matches to light the gas-lamps in purifier-house. After lighting up the building we found one of the covers partly over the purifier which had to be set to work, and I procured assistance from the retort-house to remove the cover. This being done, we set the newly-charged purifier (No. 3) to work, and thereby reduced the working pressure to considerably below its ordinary height, as indicated by the pressure-gauges. The pressure during the day was 16/10ths and upwards in place of 10/10ths, the ordinary working pressure, and this during the operation of changing the boxes would necessarily become much less. For the gas, during the operation of changing, has two outlets and inlets instead of one each, whereby the pressure is necessarily much reduced. In this case, owing to the very accurate fit of the screw and nut which wrought the valve, it had become stiffened by the impurities in the foul gas, and occupied us 20 minutes and more in closing. I was not aware that we had to encounter this difficulty, nor that when it was opened under Mr. Akines's directions that a similar time had been occupied, and made the two men sweat who did it. It appears we had locked the door after us. This could only be to prevent intruders who might be entering through curiosity. Whilst we were occupied upon the change, the engineman came to tell me that he had lost his pressure, whereupon I smiled, and told him he should have it back again before long. We then completed the closing of the rest of the valves, extinguished the lights, locked the door, and took the lamps and key back to the engine-house. My son then left me to dress, and I saw no more of him until about ten the same evening.

All was left by us in proper order; no stoppage of gas could have occurred there without giving us immediate indication thereof. Either the water in the latter must have been thrown out, or the covers lifted, and the whole volume of gas have been discharged into the purifying-house. Besides, my son after dressing, and before going up into the town, went into the retort-house, and subsequently into the engine-house, when he noticed the pressure-gauges and found them correct.

I may here notice that my eldest son has all along taken considerable interest in the gas-works. He was frequently in the engine-house at night, and almost invariably looked at the photometer and pressure-gauges. On the Sundays he took charge of the holders and the governors, unless I was in the way and attended to them myself. I may also name that I had recently before changed the lime purifiers along with my other son at night. I had at various times directed the gas passing through the lime purifiers to be tested for half an hour by Mr. M'Allister, and on this occasion the result of the test was left for me to examine in the evening, when, finding strong traces of carbonic acid in the gas, I immediately went with my son, and proceeded precisely in the same manner as in the case of the oxide-boxes; but the valves being easily wrought, the time occupied was short, and the loss of pressure, being beyond the oxide of iron purifiers, could not be noticed in the engine-house, where there is no gauge connected with them.

Since Mr. Akines left the gas-works I never allowed the purifiers to be changed unless I was present.

I proceed to describe the method of changing the purifiers from Nos. 1 and 2 to Nos. 2 and 3. For better understanding this, I have prepared a plan showing the purifiers as in operation, firstly before, and secondly after changing. A, B, D, E, G, H, are inlet-valves; C, F, and J are outlet-valves. The blue line with arrow shows the direction of the gas as we found it working. The gas was entering No. 1 at the inlet A, and passing therefrom to No. 2 by the inlet D, and going out of No. 2 at the outlet F. The red line with arrow shows the direction of the gas as we left it working. It was entering No. 2 at the inlet E, and passing to No. 3 by the inlet G, and going out of No. 3 at the outlet J. In effecting this change, the inlet G is slightly opened to allow the gas to force the air out of the plug-holes in the cover of the newly charged purifier, No. 3. Then the outlet-valve J is opened, the plugs are replaced in the cover, and the inlets G and E are opened. At this period the gas is entering at A and E, and issuing from F and J. The stiff valve A of the last used purifier is then closed. Next the inlet-valve D of the first charged purifier is closed, and finally the outlet F from the same purifier is also closed. These changes being effected, the gas enters by one inlet-valve and passes out by one outlet-valve, from whence it proceeds to the lime purifiers.

After changing the purifiers, I proceeded to the office, and was occupied writing till about 20 minutes before eight, when Mr. Melrose called upon me. I have been particular in learning the time of Mr. Melrose's visit, since he thought it had been about 10 minutes after seven. I ascertained of the gentleman from whose house he had come that he had left there at half-past seven. I conversed with Mr. Melrose for 20 minutes or more upon gas and water matters, and respecting the Penrith water arbitration case, on which he was engaged. During the conversation, Diamond, the engineman, came to the office, and said that a stoppage had occurred in the gas, and that the meter was standing. Mr. Melrose and I went immediately to examine the meter, and after finding the by-pass and water-line correct, we proceeded to take the dial-face off

the meter. Whilst some tools were being obtained for that purpose, I went to the purifier-house, where I found all in order, and immediately returned to the meter-house. About this time I gave orders for all the lids to be slacked off in the retort-house. At eight o'clock the lids had been taken off several of the through retorts, which were drawn, but not recharged as was usual, owing to the back pressure which came upon them, and shortly after discharged the tar from the hydraulic main into them. After finding that the meter was in proper working order, we proceeded to the washer-house, and there found the gas issuing from two openings in front of about 3 by 2 inches. I then had the by-pass opened, and the gas turned off from the washer. Whilst preparing for this, a valve in the 15-inch main in the washer-house leading from the washer to the purifiers was found closed. By the closing of this valve the whole of the gas in process of manufacture was stopped, and thrown back upon the washer and the retorts. This result would immediately follow its closure. This valve did not require to be handled, and could not have been closed by mistake. It required upwards of 30 complete turns of its handle to close it. It must have been wilfully shut with the foulest design; by whom it is not for me to say. This, however, is known—that the valves in the washer-house had been handled in the course of the day by some one who had no occasion to interfere with them, and that other circumstances had occurred of a somewhat dubious character, to which it would be improper of me to refer further. This discovery was made when I was absent from the washer-house, but its effect had not been understood, since the matter was not communicated to me at the time, and I only ascertained it from the engineman on the following day. In the absence of such information, every conceivable cause of stoppage was examined into, and all the by-passes opened, and including one at the entrance to the purifying-house, by which the gas is conveyed to the lime-boxes without passing through the oxide-boxes. These expedients, except that of opening the washer by-pass, as was subsequently found, were of no value, since the entire cause of stoppage had been discovered and remedied, though disregarded at the time. When the manufacture of gas was subsequently proceeded with, without passing it through the washer, there was no obstruction found to its flow, either in the purifier-house or elsewhere, which further shows that the obstruction had solely occurred in the washer-house. There is also another circumstance to be noticed remarkably confirmatory thereof. It was also found on entering that the gearing of one-half of the washer had stopped working. This could only have been occasioned by throwing off the belt. The party who did this evidently did not know that it could not affect the passage of the gas through the washer. The belts driving the washer were remarkably true, and could not come off of themselves. There is no doubt that the belt had been wilfully displaced. On examining the washer upon the following day all the machinery was found in good order and capable of being turned by hand.

Two of the hydraulic mains at the south end of the retort-house were sealed up with water without difficulty, and the retorts were got ready to charge. Those at the north end were sealed later on, and with greater difficulty, Attempts were made by Mr. Melrose and others to replace the lids of the retorts at the north end, so as to prevent the gas issuing from them, and to divert it into its proper course. These attempts were unsuccessful. In order to prevent the gas from the new retort-house feeding the retorts through the unsealed hydraulic mains, I had the two valves communicating with the 15-inch conducting-main closed. I had the ladder brought, and directed the man (who was about to close the wrong one) to the proper one, and saw it closed. I then ordered the corresponding one on the other side to be closed; this was done. Some one else, however, ignorantly took upon himself to order the one I had directed the man from, and its corresponding one also, to be closed. By this means the passage of the gas from the already sealed hydraulic mains was prevented, and, as I had directed the retorts communicating therewith to be charged at once, the consequences would have been serious but for the timely discovery of my eldest son. He observed a ladder placed against one of these valves and inquired the reason, and learnt that this and the corresponding one had been closed. He at one informed me of it, and I immediately had them opened.

The hydraulic mains at the north end were subsequently sealed, the valves re-opened, and the manufacture of gas resumed in time to obtain a sufficient supply for the following morning.

I have been somewhat minute in describing the circumstances of the stoppage, which I could have fully detailed a month ago had the committee directed me to do so. On the contrary, I was suspected, and even accused by Mr. Hodgson at one of the committee's meetings, with having wilfully sought to destroy the gas-works. That I should be accused of attempting to perpetrate such a crime in my closing years, is a stigma as undeserved as it is baseless and cruel to utter.—I am, &c.,

Jan. 10, 1870. GEORGE PORTER.

Mr. HARDY: There is another document or two I wish read, if I am not trespassing too much. In the interests of justice and fair play I ask that they should be read. The works which have been done at the gas-works were done under the direction of the Gas Committee, and I beg, therefore, that the report of Mr. Reid, when first called upon to give his opinion of the gas-works, be read, and also the same gentleman's subsequent report when the works were finished.

Mr. IRVING: Perhaps, before what Mr. Hardy has asked for be read, the town-clerk will read Mr. Porter's report of the accident furnished to the Gas Committee, a portion of which has been suppressed, and the public will be able to judge why it has been suppressed. I would appeal to the mayor, in all fairness to those who are here to hear these proceedings, that whatever their feelings may be, they should not exhibit any manifestation of them while these proceedings are going on. It is not fair to Mr. Porter himself, and it is not fair to the gentlemen engaged in these proceedings.

The TOWN-CLERK read the following report made by Mr. Porter to the Gas Committee on the morning of the 10th of December, 1869:—

About half-past eight in the evening of the 8th inst., a stoppage occurred in the passage of gas about the works. This was reported to me in the office, where I was with Mr. Melrose at that time. (This was about eight, Mr. Melrose having found me writing in the office about twenty minutes before eight). We immediately proceeded to examine the station-meter, which (as reported to me) had stopped. After assuring myself that all was right in the purifying-house, and having found by careful examination that the meter was all right, I proceeded to the washer-house, which we found open—*i. e.*, not locked, but the door shut—and the gas blowing out of the washer. The room was at this time nearly filled with gas (approaching 10,000 cubic feet), where it had been discharging itself for nearly half an hour (it being now nearly 8.30). After having gone quickly to my house for whisky to prevent exhaustion of the men who were required to examine and close the valves (of the washer), I returned and had the gas shut off both in the inlet and outlet valves, and at the same time had the by-pass opened and in operation. The effect of the lengthened stoppage of the flow of gas was to throw the whole of the tar out of the two principal hydraulic mains, so that the gas could not be retained in the mains, and the gas from the other mains came back through the passage thus opened for its exit. This back-flow of gas was prevented by closing the necessary valves. At this time other orders were given besides mine, and two other valves were closed, which, but for the timely discovery of my eldest son, would have resulted in bringing about a similar state of things in two other hydraulic mains. The employment of Davy lamps allowed a safe entrance into the washer-house. The quantity of fire in the retort-house, whatever its appearance, was not attended with any real danger. Owing to the confusion at the time, and the well-meant, though injudicious, over-sight of others, the cause of the accident was not apparent until the following day, nor would the precise point of the cause of the accident——

Mr. IRVING (interrupting): Now the part suppressed by the *Journal* begins at the word "have," for what reason the public will be able to judge when they hear it.

The TOWN-CLERK continued the reading of the report—

—have been solved but for inquiries which I made; the result of these inquiries led me to learn that the 15-inch valve on the main leading from the washer to the purifying-house had been closed, and hence all the stoppage and the difficulty which arose to learn the cause has arisen. It appears that whilst I was away a few minutes obtaining whisky, the valve in question had been partially opened, and then as abruptly closed without knowing for why; and then, asking for advice of Mr. Melrose, who showed them which was turning the valve sun-ways, was finally opened. This valve must have been wilfully closed at the moment of the stoppage of gas occurring. This is clear, for the gas could not by any possibility have previously passed on to the purifiers had it been closed. It is rather remarkable that one of the two individuals upon whom the suspicion of the accident at the gas-works fell, was working in the washer-house during the day.

The TOWN-CLERK next read Mr. Reid's report of the 20th of October, 1868, a copy of which appeared in the *Express* at the time of its production before the council.

Mr. HARDY: The other report is from Mr. Reid's recent report.

Mr. IRVING: Here is an intervening report. Do you wish to have the whole case, or do you wish to have it only partially?

Mr. HARDY: No; the whole case.

The TOWN-CLERK then read a report from Mr. Reid of the 24th of February, 1869, a copy of which was also published in the *Express* at the time it was read to the council.

The following report of Mr. Reid was next read by the TOWN-CLERK:—

2, *Queen's Place, Leith, Dec.* 11, 1869.

Dear Sir,—In compliance with the wish of the committee, I have now respectfully to submit a report of my late visit to, and inspection of the gas-works at Carlisle, on the 4th inst., and particularly as respects the alterations, additions, and extensions effected on the establishment during the year, and under my recommendations in previous reports.

The time of my visit was favourable for examining the works in full winter action, and I have much satisfaction in finding that the gas now being supplied for consumption is free from the impurities formerly characterizing it, and is decidedly much improved in its illuminating power.

The alterations made in the hydraulic mains and retort-house piping have been carried out satisfactorily, and obviate the causes of derangement and inconvenience formerly existing.

I found the whole available retorts were in operation. As it is not safe at this season to be unprovided with spare retorts in case of accident, it would be prudent to have a few spare ones always ready to act, and in reserve during the winter months, for which there is ample accommodation in the retort-benches. I am also of opinion that it is extremely desirable that one trustworthy stoker by day, and one by night, should have some supervision over their fellows, with a few shillings extra pay; his duty being to see to the regular working of the retort department, as well as the regulation and proper heating of the retorts. They seemed to me defective in heat, and requiring a higher and more uniform temperature to distil the coal to the best advantage, and yield better results per ton.

The condensing apparatus appeared to be doing the work satisfactorily. It is probable, however, that this apparatus will be the first to require some extension—but not for the present.

I carefully examined the whole new apparatus now in operation, and, with the exception of one or two little matters applying to the oxide purifiers, which I pointed out to Mr. Porter as requiring the contractor's attention, I have much pleasure in certifying as my opinion that the several sections of the new apparatus, comprehending the steam boilers and engine power, the exhauster apparatus, the gas-washer and running machinery, and both sections of the new purifying apparatus, have all been completed to plans and specifications in a satisfactory and efficient manner. The whole of these erections appear unexceptionably excellent in construction, materials, and workmanship, and perform their functions in a manner which I have no doubt will prove as satisfactory to the committee as it is creditable to the several contractors for the work.

The good arrangements maintained all along for disconnecting and displacing the old, and fitting and adapting the new apparatus, without interrupting the ordinary manufacture, required much judgment and foresight for its accomplishment, and have proved singularly successful; and, in my opinion, the general appearance of the completed work does much credit to Mr. Porter's assiduous care, constructive taste, and ability.

I recommend that the purifiers should be provided with one or two hundred spare trays, as these will now and then require spare ones for breakage.

The previous short supply and low pressure of gas in certain districts, referred to in my report of February last, are reported to me to be completely rectified by the new trunk main which now leads from the works to the top of Abbey Street, as then recommended.

I consider the gasholder accommodation still sufficient for a considerable increase of consumption, and do not think the expense of a new gasometer need be incurred until the present ones are inadequate to contain 75 per cent. of the daily consumption in the depth of winter. A few extra retorts for a week or two would tide over an extra large consumption about Christmas.

On Mr. Porter's attesting the few extra charges for goods furnished by Messrs. Mudie, Jones, Hanna, Donald, and Wilson, and for workmen's time, &c., by T. M. Tennant and Co., I am of opinion that the committee may safely pay up the balances now due on contract prices.—I have, &c., JOHN REID.

John Irving, Esq., Chairman of the Gas Committee.

Mr. IRVING (to Mr. Hardy): Do you propose to take any action on these documents?

Mr. HARDY: No, sir; the documents are now in the hands of the public. I shall be prepared, if the committee do not recommend Mr. Porter as one of the candidates, to propose him.

Mr. IRVING: I beg to move that the report just read by the town-clerk, and sent by Mr. Porter, be referred to the two gentlemen who have been appointed to investigate the cause of the accident. It will be in the recollection of the council that Mr. Forster challenged me to state the result of my investigations into the accident; of course some gentlemen did go into the matter for their own satisfaction, but up to the last council meeting only three or four days had intervened since the accident. However, seeing the turn the matter had taken since then, I did not feel justified in going any further in the affair; and, with the concurrence of others on the committee, two gentlemen of character and respectability were appointed to conduct the investigation. One of them is manager of the gas-works at Sunderland, and the other (Mr. Malam) manager of the gas-works at Dumfries. The manager of the Sunderland Gas-Works had held the post for some time, and enjoyed the confidence of his employers. Mr. Malam was one of the candidates for the vacant post, and his recommendations were of so high an order that he stood a great chance of being selected. However, his present employers had agreed to advance his salary £60 per year rather than part with him. Therefore, putting these circumstances together, we thought them fit men to assist in this investigation. You are aware, from the report read from Mr. Porter, that he was applied to, to give evidence if he were so minded. He would only do so on condition that his legal adviser should accompany him. We did not see any need for the presence of a gentleman in that character, and the difficulty arose in that way. It was plain that, in an examination of witneses consisting of men on duty at the works at the time of the accident, such presence would only cause delay; and if those gentlemen who were conducting the inquiry thought it requisite to have legal advisers present they would have applied for them. Therefore I think the offer was a fair one towards Mr. Porter. What I do propose is that the document from Mr. Porter, now before the council, be referred to Messrs. Cox and Malam, the two gentlemen now engaged in the investigation as to the cause of the stoppage at the gas-works; then, after we have heard their report, and if anything new is likely to arise, it will be for the council to act.

Mr. HODGSON seconded the motion, which was carried unanimously.

Mr. IRVING: Mr. Mayor and gentlemen of the council, before I submit for your consideration the name of the gentleman who is the candidate selected to be the manager of the gas and water works, I had better describe to you what steps have been taken since the last meeting of the council, in order to guide you in coming to a decision. We have been made aware that by one of the clauses in the appointment of the surveyor he is required to do certain things in connexion with the gas and water works; and we thought it would be a fair mode of arranging the duties by leaving the manager of the gas-works to devote his whole attention to the manufacture of gas, and relieve him of some of the duties which should devolve upon the surveyor. After a consultation with the surveyor, that gentleman has freely admitted that those duties belong to him.

Mr. Irving handed to the town-clerk the following statement of the duties of the surveyor in connexion with the gas and water works, which that gentleman read—

Duties of the Surveyor in Connexion with the Gas and Water Works.

1. He shall take charge of all the gas-mains in the streets; also superintend the laying of all extensions.
2. He shall take charge of all the water-mains, sluices, and hydrants in the streets; also superintend all extensions.
3. He shall take charge of the whole of the water-works, filter-beds, engines and engine-house, culverts, reservoirs, &c.; with authority to call in Mr. Melrose as to the engine power, so long as Mr. Melrose's engagement with the committee continues.
4. He shall furnish to the gas-works an account each week of the number of days any workmen have been employed, and the rate per day.

5. Duplicate plans, showing the gas and water mains, to be provided at the expense of the committee.
6. All house connexions of gas and water, also the fixing and alteration of the public lamps, to be under the gas manager.
7. The Health and Finance Committees to have the first call of the surveyor's services.

At the request of Mr. Irving, the town-clerk also read the following duties of the gas manager—

The manager to be appointed by the Carlisle Gas and Water Committee, is to reside on the premises, and devote his entire time to their service and to carrying out their instructions.

The following are amongst the duties he will be called upon to perform :—

1. The whole control and superintendence of the gas-works, and also the manufacture of gas.
2. The laying of all branches from the mains, and the fittings connected therewith.
3. To recommend to the committee any alteration or extension of mains required, which will be executed by the city surveyor.
14. To control and direct all servants employed by the committee, except those in the office.
5. To furnish to the office all necessary returns, which may from time to time be required, connected with the manufacture of gas and the sale of coke, tar, ammoniacal liquor, old materials, &c.
6. To make out an account weekly of the wages due to each of the workmen employed by the committee.
7. To take charge of the branch-pipes, and all connexions therewith, of the water-mains, and to superintend all fittings of gas and water.
8. To take charge and direct all inspections of meters, turncocks, &c., and to furnish to the office the result of the meters, both gas and water.

The manager will be required to enter on his duties on the 1st of February, 1870, or earlier if convenient.

The annual consumption of gas is over 80 million cubic feet.
The daily delivery is at present over 400,000 cubic feet.
Number of retorts in use, 120.

Mr. Irving: Well, sir, in consequence of the advertisement which we directed to be inserted in several papers, both in London, Lancashire, Yorkshire, and Edinburgh, we received 146 applications for the post. The committee went carefully through the whole of those applications, and the testimonials which accompanied them. The result was, after bestowing a very great length of time, at various periods, on the consideration of this matter, we came to the conclusion to select six of those we considered most eligible for the post, and sent for them to be present for examination. From Friday till yesterday we had these six gentlemen before us, and our deliberations were such that we came to the conclusion to recommend a gentleman for election who is well spoken of, and whose testimonials are of the highest character. His name is Mr. J. Hepworth, the present manager of the gas-works at Brighouse, near Bradford.

The Town-Clerk read the following application from Mr. Hepworth:—

The Gas-Works, Brighhouse, Dec. 24, 1862.

Sir,—I beg leave to apply for the situation of manager of your works, as advertised in the *Leeds Mercury*, and in doing so to state that I have held the managership of these works nearly three years, previous to which I was assistant at the Coventry City Gas-Works for upwards of nine years; the annual consumption at the latter place being equal to that in Carlisle. I am thoroughly and practically conversant with all the duties of such an appointment as that at your disposal, having had the entire control of the gas-works and the laying of the *whole* of the water mains and services in this town. And during the term of my managership here have been enabled not only to improve the works, but to reduce very considerably the cost of manufacture of gas, and, I think I may add, to gain the increasing confidence of the Gas and Water Committees and the board.

The testimonials, of which I have the pleasure to enclose copies, were given to me with the view of my becoming a candidate for the managership of the Gravesend Gas-Works on a recent occasion, and they will, I trust, confirm what I have above stated.

Should it be your pleasure to appoint me to the situation I now seek, I should earnestly and faithfully devote myself to the duties thereof.—I have, &c.,

J. Hepworth.

John Irving, Esq.,
Chairman of the Gas and Water-Works, Carlisle.

Mr. Hepworth enclosed eight testimonials, which had been obtained on the occasion of his applying for the managership of the Gravesend Gas-Works, and, on the suggestion of Mr. Irving, the Town-Clerk read the three following testimonials, numbered respectively "3," "7," and "8:"—

Halifax Corporation Gas-Works, July 24, 1869.

Gentlemen,—Mr. Hepworth, engineer and manager of the Gas-Works, Brighhouse, Yorks, having expressed the wish that I should bear testimony to his ability for performing the duties of manager of your gas-works, I have much pleasure in stating that he has obtained a very favourable standing with his present employers by the exercise of his talents and the steadiness of his conduct; and I am confident, should he have the honour of being elected, that he will give you every satisfaction by the urbanity of his disposition, and his *practical* experience in the economical management of your works.—I am, &c.,

George Dunbar Malam, Engineer and Manager.

The Manor House, Brighouse, July 22, 1869.

Gentlemen,—Mr. Hepworth, manager of the Brighouse Gas-Works, informs me that he is applying for the situation of manager of your gas-works.

As chairman of the Brighouse Local Board, I have much pleasure in testifying to the great ability he has displayed as manager here, having introduced many improvements whereby great saving has been effected. He is honest, sober, attentive to his duties, and very obliging; and I have no hesitation in saying that you would find him a most valuable servant.—I am, &c.,

Kaye Aspinall.

Brighouse, July 22, 1869.

Gentlemen,—I understand that our manager of the gas-works here (Mr. Hepworth) is a candidate for the situation of manager for your works; and, as one of the members of the local board and one of the Gas Committee, I have great pleasure in giving testimony to his uniform good conduct and ability as a gas-works manager.

I have been one of the Gas Committee some *time before* and *ever since* Mr. Hepworth was appointed manager, and consequently have had every opportunity of judging of his abilities *as such*, and how he has managed, compared with others. Since he has been here he has suggested many valuable alterations to the committee, which have been carried out, and has conducted the general business of the gas-works he has had the management of in such a manner that now we are producing gas of equal illuminating power at 6d. per 1000 cubic feet less than we were when he first came to us; and I am sure I have the greatest confidence in saying that, if he should be appointed to the situation he is applying for, he will give you perfect satisfaction; and, in every sense of the word, I believe him to be *quite competent* to fill *efficiently* the post of manager to the Gravesend and Milton Gaslight Company.

I am sure there is not a member of the Gas Committee here who would not regret very much the loss of Mr. Hepworth—other than that he would be improving his position—for he has given them complete satisfaction, is universally respected, and is obliging, kind, and respectful; and he is most trustworthy, steady, and industrious.

"I may further say Mr. Hepworth has had a great deal of work to discharge in the situation he has held here in connexion with the local board, besides the management of the gas-works; but, whatever he has had entrusted to him, I do not hesitate in saying that he has given entire satisfaction to the members of the local board of Brighouse.—I am, &c.,

John C. Bottomley.

Mr. Irving: I beg to move that Mr. J. Hepworth, of Brighouse, be appointed gas and water works manager at Carlisle, at a salary of £200 a year. I think I may undertake to say, from the experience the committee have had of Mr. Hepworth, that he will be found a good man for the post; and there can be no objection in the council of Carlisle, if we succeed in effecting that at a reduction of salary—£100 less than was paid to Mr. Porter. I think I may promise that by the time he has served as long as Mr. Porter has done, he will have gained the confidence not only of the council, but of the citizens of Carlisle with whom he may come in contact. Now, sir, the final separation between Mr. Porter and this council was effected by an order made by this council, under the auspices of the Gas Committee; and I may mention to you certain proceedings which took place on the 23rd of December last, through which a great deal of odium has been thrown on the committee, and more especially on myself—our proceedings on that occasion being characterized as very harsh. It was the opinion of a great many of my colleagues, immediately after the breaking up of the council, that the termination of the connexion should be as speedily brought about as possible. I was inclined to dissent from that view, partly on account that I was solicitous that the matter should stand over for two or three weeks, in order that in the interval we might get adjusted the final accounts incurred in carrying out the extensions at the works, which had in some measure come under Mr. Porter's eyes for examination. Therefore, we thought it judicious to continue Mr. Porter's services until we got the accounts adjusted and placed in a satisfactory state. Well, I directed Mr. Porter, by letter on the 16th of December, to get all the accounts ready, showing what balances were owing on the separate contracts, so that the committee might be in a position to go into them on the following day. Although Mr. Porter had 24 hours notice, he paid no attention to my requirements; and on questioning him he said he had been very much occupied. On questioning him as to what he had been doing, I found that he had been preparing returns furnished to the *Carlisle Journal* in order that a leading article might be founded on them quite in opposition to the committee, and more particularly in opposition to myself. Of course these returns were made use of and set forth as being correct, while those produced before the council by myself were described as "thrown before the council to swallow," having been cooked by me for that purpose. Now, notwithstanding the short time permitted me to get those returns which I laid before the council—only a couple of hours—after I saw who the memorialists were, on being tested I do not think they differed above £2 or £3 in the whole return. Therefore ample allowance ought to be made as compared with the returns made by Mr. Porter at the time. Now, I thought that improper conduct, to say nothing of the tastes of the people who applied for those returns from Mr. Porter. Had they properly applied to the chairman and committee, in due course their application would have been attended to. There were other matters which necessitated a speedy bringing about of the termination. All the letters of application for the office of manager were ordered to be addressed to me as chairman. On the second day after the advertisements appeared, two of the letters—notwithstanding that I had given orders that letters so addressed were to be put into my box at the post-office, and given to my messenger when he called—by accident got down to the gas-works. Mr. Porter returned them to me under cover without their being opened; but, finding that the letters were coming to me direct as chairman, Mr. Porter called at the post-office to say that all letters so addressed should be sent to him. In an interview with the post-office officials, they declined to accede to his request, having had my directions previously. Mr. Porter paid three visits to the post-office, and on the third occasion took with him an Act of Parliament to show he was entitled to have the letters and not me; and that I was chairman only while meetings were being held, and that directly a meeting terminated I ceased to be chairman. Now, I took leave to differ from Mr. Porter, and I saw the gentleman who is postmaster, and that gentleman agreed with me that if Mr. Porter had any complaint to lay he should communicate with the head office in London. I was anxious to test the accuracy of the returns published in the *Journal*, and wished Mr. Armstrong to examine them thoroughly. Mr. Porter, on finding Mr. Armstrong doing work of this kind, forbade him at his peril to give me those returns directly, and told him under no circumstances to let them go through his hands without their first passing through his (Mr. Porter's) hands to check them. He told Mr. Armstrong that his orders were peremptory, and paramount to mine. Well, this being so, we thought it was time, when a quarrel was likely to arise as to who was to be master, that the sooner we determined who was to be master the better. We met on the following day, and came to the conclusion, after full consideration of the whole case, that Mr. Porter's connexion should then and there cease. Before this was done, we had the accounts submitted to us and gone through; and I am sorry to have to refer to another matter of irregularity which came under our notice at that time. You are all aware that the irregularities in connexion with the firm of Porter, Hinde, and Porter were the subject of comment and investigation. At the proceedings which took place on the 8th of August, Mr. Porter stated, in his own defence, that he had purposely withheld the knowledge of these transactions from the committee, in order that he might not subject himself to a repetition of the animadversions that had been made previously in reference to his conduct in dealing with Messrs. Porter, Hinde, and Porter. I am sorry to say that, subsequently to the period when he so acted (on the 8th of August), we have been furnished with accounts for goods contracted for by Mr. Porter without the knowledge of the committee, and supplied by Messrs. Porter, Hinde, and Porter. I made inquiries of Mr. Armstrong whether he had any knowledge of these accounts, and he told me that one of them was put among the other accounts to be submitted to the committee, in order that it might be passed with the others at the October meeting; but that Mr. Porter took them from him, and said he did not wish them to come before the meeting at that time. You will be aware that these irregularities were under the consideration of the committee at that time. Therefore Mr. Porter, for reasons best known to himself, withheld them, and they only came out at the last moment. The committee have decided that these two accounts should be laid aside for the present, until they see what action should be taken on them. One of these accounts was for £53 for the gas-works, and the other £20 odd for the water-works—making altogether between £70 and £80—part being contracted for before the 8th of August. On proceeding to check the correctness of these accounts, we only found information with reference to four transactions with the gas-works, although there were something like a dozen or a score of items. As I said, Mr. Armstrong was only able to check four, and the only person who had any check or information with regard to them was Mr. Porter himself.

Mr. Hardy: May they be read?

Mr. Irving: Allow me to pursue my own course, and anything you wish to ask I shall willingly answer when I finish. Some of the items were for day work, numbering about 60; and it did not appear that any servant at the gas-works, excepting Mr. Porter himself, had any check on the account. With reference to the account of the water-works, it was laid before us for payment, certified by Mr. Dixon, the engineman at the water-works. Of course I sent for Mr. Dixon, and questioned him on the subject, but all the information he could furnish was that he knew the work had been done, and the goods got. Beyond this he could not furnish us with any information. We thought this was an irregularity very much similar to the others, and necessitated, along with other things, the parting with Mr. Porter at once. There is another thing I must mention, with reference to the lamp at Holme Head, about which much has been said. Some time in the course of last summer an application was made by Messrs. Ferguson Brothers, or some one in connexion with their firm, for a lamp somewhere near their works. A lamp was ordered by the council to be erected. Of course there is one uniform principle upon which the erection of these lamps is conducted. They are erected at a cost to the council of £2 8s. or £2 10s. Without any instructions, or any proper information given to him by the committee of any kind whatever, Mr. Porter, upon his own responsibility, ordered a new lamp of a different character, and placed it there at a cost of somewhere about £8 10s. That only came to our knowledge on the very last day of Mr. Porter holding office. He was asked some questions regarding it, and after a little bit of fencing and equivocation, we at last arrived at the result that it cost £8 or £9—I think about £8 10s. When questioned as to whether he could point to the resolution which authorised him to do so, he could not, but said he mentioned it to the committee. I told him I had no knowledge of it, and when I asked the gentlemen present they said they had no knowledge of anything of the kind—not the slightest remembrance of anything of the kind having taken place. Then Mr. Porter stated—and this is the point to which I wish to draw the attention of the council, because you will see in the report of Mr. Robert Lattimer's speech, when he addressed the citizens of Botchergate,

and from his brother, Mr. William Lattimer, who writes in the *Journal* of this morning, that they give different versions of the affair altogether to Mr. Porter—Mr. Porter said they were good customers, and he was afraid they were going to make their own gas, and they should have a better lamp than ordinary on that account.

Mr. SAWYER here interrupted Mr. Irving by telling him to be quick.

Mr. IRVING: The story told by the two Lattimers was this—"Mr. Porter informed me during an interview he had at the corner of Mill Street, with the manager of Cummersdale Print-Works, in whose company I happened to be at the time, that owing to the kindness of Messrs. Ferguson Brothers (in making no claim on the Gas Committee for breaking up their footpaths in laying the gas-pipes to Cummersdale, as also in granting them ground inside the boundary wall of their works for building a meter-house for the Gas Committee at a nominal rent only, and for the general facilities and help afforded by them to the Gas Committee in carrying out its arrangements with Messrs. Stead, M'Alpin, and Co.), they had ordered a more ornamental lamp for Holme Head, as some compensation for the above-named accommodation." Now, it happens that Mr. Porter's story seems more correct than the other, because the order was given for the lamp by Mr. Porter in London, on the 27th of July, and it was not completed till some two months after that date; but the order for commencing operations at Holme Head did not take place until a subsequent period. Therefore, there could have been no accommodation as to the laying of pipes up to that period. That being so, I leave Mr. Porter and them to settle the point between themselves, and on that point I will say no more. Immediately upon this circumstance being made known to Messrs. Ferguson Brothers, they wrote to me, and enclosed a cheque for the difference in the cost of the lamp put up, and the cost of an ordinary lamp. The matter was brought under the consideration of the Gas Committee, and as you see by the same letter of Mr. Lattimer, the Gas Committee decided not to take the money. If an application had been made by Messrs. Ferguson Brothers to have something more extra done to the lamp, I do not think there would have been any objection.

Mr. HARDY: Certainly not.

Mr. IRVING: You had better wait till I am done.

Mr. HARDY: I am waiting patiently.

Mr. IRVING: The ground of offence is that Mr. Porter took upon himself the responsibility of doing this without the knowledge of the committee. The resolution of the committee sent to Ferguson Brothers was as follows:—

Resolved, that the chairman be authorized to return Messrs. Ferguson Brothers cheque of £5 15s., and to state that any observations that have been made on the subject of their letter on the 3rd inst. by the committee have had reference only to the conduct of their late manager, and that no reflections whatever have been cast on Messrs. Ferguson Brothers, nor on any of their *employés*.

That was the resolution come to, and I think it disposes of the case so far as the matter with Messrs. Ferguson Brothers and the committee rested. We have, sir, had presented to us to-day a memorial which, we are informed by a gentleman present, contains the names of from 1400 to 1500 people. I should like if he would inform us how many of those who recently signed the memorial of 33 that was presented to us on the last occasion, have refused to sign this one. Perhaps the gentleman to whom I refer will furnish us with this information before the proceedings of to-day close. Now, sir, I take leave to say that, although it is very numerously signed—and a very short time has been afforded me of running over the list—I have now lived some time in Carlisle, and ought to be pretty well cognizant of the people who are large consumers of gas, and the people of position in the town, and I do not think one-twentieth part of them are at all familiar to me. Assuming they were all known to me, I say there are between 4000 and 5000 gas consumers; and admitting they are—which I do not, except for the sake of argument—that every one there is a gas consumer, I contend that the memorialists are only one-third of the number, and the two-thirds who have taken no action in this matter are relying upon the gentlemen who represent their interests in the council, and that those two-thirds ought to be cared for. I have just been reminded, and I ask how many of the names are in the handwriting of one person? I should like very much to know from Mr. Cockburn by whom these papers were hawked about, and the kind of influences brought to bear upon people in order to induce them to sign the memorial, because I very much question that the proper case was laid before each person when their names were solicited. I have been told that it has been set forth that there are gentlemen on the committee who had a thorough hatred to Mr. Porter, and that from the time he had been at the gas-works, they had been unceasing in their efforts to get him ousted from office. Such statement I repudiate, both on behalf of myself and on behalf of every man connected with the committee. There have been attempts to injure and detract from the public reputation of several members of the committee engaged in this matter. There has been one attempt, in part successful, to the effect that an attempt was being made by the Tories of Carlisle to crush Mr. Porter. Now, I hope, whatever differences of opinion may take place on matters of this kind, that even those whom I am sorry to call my political opponents, will not be so uncharitable nor unjust as to heap an infliction upon a man undeservedly; and I, therefore, on my own part, and on the part of those associated with me, distinctly repudiate that charge also. I think the committee and council have not been guided by any considerations of that kind; they have been actuated by principles of a higher character. Now, sir, I see it has been stated at one of the meetings that we have been guilty of very outrageous conduct in withholding (I have been told) from two members of the council the last report of Mr. Reid. I was aware that one application was made to me by a gentleman sitting below me (Mr. Cockburn). I was not aware, until some time after, that any application had been made by Mr. Alderman Watters. I understand Mr. Watters did call at the office after the document was placed before the committee, and he was told if he saw Mr. Armstrong he would get a sight of it.

Mr. WATTERS: I saw Mr. Armstrong.

Mr. IRVING: Now, Mr. Watters, you will have an opportunity afterwards. Mr. Watters called to get the report of Mr. Porter to the Gas Committee with reference to the accident. Perhaps he will be able to explain—at least, he or Mr. Porter will be able to do so—how the *Carlisle Journal* was furnished with only one portion of the report. I took leave to say to the committee, when the subject came before us, that if Mr. Watters had called upon me, as he was desired by Mr. Armstrong to do, he would have seen the report. It happened at that time to be in the hands of Mr. Hodgson, who was taking out of it some memoranda which he required. I say, as I said to the committee at the time, that the purpose of the parties who were making Mr. Watters their instrument to do this was served by Mr. Watters not seeing the report; although Mr. Watters complained very bitterly to Mr. Porter, after leaving the gas-works and going into Mr. Porter's house, about the treatment he had received at the gas-works, and Mr. Armstrong not knowing the Act of Parliament on the subject. I dare say Mr. Watters was very indignant at the time, and showed his indignation by a letter which appeared in the papers. As I said then, and say now, I do not think any one would be so cruel as to charge Mr. Watters with writing that letter. Now, sir, as it has been made a matter of complaint against me that I withheld this report, I think the best thing which I can do will be to read a correspondence which took place between Mr. Cockburn and myself in reference to it. As I have got it into a convenient shape, perhaps the town-clerk will read it.

The TOWN-CLERK read the following correspondence:—

12, *Bolton Place, Carlisle, Dec.* 28, 1869.

Dear Sir,—I wish to see Mr. Reid's last report upon the gas-works, &c., and will call at the gas-office to-morrow morning, at ten o'clock, when you will be good enough to have it left out for me to peruse,—Yours, &c.,

J. Irving, Esq. J. T. COCKBURN.

12, *Bolton Place, Carlisle, Dec.* 29, 1869.

Dear Sir,—When I called at the gas-office at ten o'clock this morning, I received your message through the clerk, to the effect that you had another engagement, and could not be there at the hour named in my note of yesterday. It is only the report from Mr. Reid that I wish to see, and will thank you to say if I can peruse it at your office, or, if more convenient, will you send it to me here?

I wish to see this report at once.—Yours, &c.,

J. Irving, Esq. J. T. COCKBURN.

Carlisle, Dec. 29, 1869.

Dear Sir,—I duly received yours of the 28th, demanding to see the last report of Mr. Reid. As it was addressed to me as chairman of the Gas Committee, and no meeting of that committee having been held since it came into my hands, except for special purposes connected with Mr. Porter's dismissal, I must decline letting you have the use of it until then. If you had been sufficiently experienced in the mode of conducting business of this kind, you would not have asked, much less demanded to see a document that was confided to me until the time arrived for placing it before the body to which it belongs.

In case you have occasion to make any reference to my refusal to comply with your requirements, I beg that you will read this letter, as I have had statements made by me not only garbled but misrepresented.—I am, &c.,

Mr. J. T. Cockburn. J. IRVING.

12, *Bolton Place, Carlisle, Dec.* 30, 1869.

Dear Sir,—I have your letter refusing to let me inspect a document belonging, as you say it does, to the Gas Committee. I merely note that refusal to say you are not justified in withholding the report in question. Your assumption of superiority as to experience in conducting business of this kind is uncalled for, as it is a matter of fact that all documents belonging to the Gas Committee may be inspected at any time by a member of the council.

I will only add that in no case was it my intention to use either the report or your letters, as you seem to imply, in public; and suggest that much of what you call garbled and misrepresented statements of yours might be avoided by more frankness in such matters as Mr. Reid's report.—Yours, &c.,

J. Irving, Esq. J. T. COCKBURN.

Carlisle, Dec. 31, 1869.

Dear Sir,—I have no desire to argue with you the question of your right to demand a sight of Mr. Reid's report, nor your interpretation, *à la Porter*, of the Gas Act that confers on a councillor the right to inspect any documents the property of the Gas Committee.

I know no law that authorizes any one to intercept a letter on its way from the hands of the writer to its place of destination, and your assumption to do that which no other member of the committee would think of doing is only equalled by Mr. George Porter's demand to intercept letters addressed to me on their way to my place of business.

If your object in wanting Mr. Reid's report is solely to benefit the town, or relieve your mind as to any anxiety connected with the gas-works, and you let me know, I will forthwith summon a meeting of the committee, and lay before them the report of Mr. Reid, which you will be entitled to see then, but not till then.—I am, &c.,

Mr. J. T. Cockburn. J. IRVING.

12, *Bolton Place, Carlisle, Jan.* 1, 1870.

Dear Sir,—I cannot allow your letter of yesterday to pass without again protesting against your assumed right to withhold from a councillor a document addressed to the Gas Committee through you, its chairman. This report of Mr. Reid's was undoubtedly the property of the committee as soon as it came into your hands, and you are acting in a most unwarrantable way in keeping it from any member of the council for some two or three weeks after it reached you. I cannot think it possible you contend for the power to keep out of the way for such a length of time a document which bears upon a question now being much canvassed by the burgesses, such document belonging, as you admit, to the Gas Committee. The unfairness of thus withholding an important report, I will not further comment upon.

Your question as to my object in wanting to see Mr. Reid's report, whether "solely to benefit the town," or to "relieve my mind," must remain unanswered. You make the liberty to inspect the report now contingent upon my answering that question. Certainly this is another of your "assumptions" never even equalled by Mr. George Porter.—Yours, &c.,

J. Irving, Esq. J. T. COCKBURN.

Mr. IRVING: I thought the latter part of the correspondence was couched in language of so unsuitable a character that I declined to continue it any longer. It was brought before the committee, and they felt somewhat pained that Mr. Cockburn should have written such a letter; whereupon Mr. Cockburn withdrew any desire to cast any imputation upon me, therefore I was quite ready to accept it in that spirit. Now, a great deal of "fuss" has been made about a paragraph in Mr. Reid's report. I have not only acted on my own judgment in the matter, but I have been borne out by the opinion of the town-clerk and his partner in respect to it. No member had any right to demand this document, which was addressed to me as chairman, until it had been laid before the committee at its first meeting. Assuming that all that has been said by Mr. Reid about Mr. Porter had been made public, do you think that the matter was of sufficient importance to make us retrace our steps and, on Mr. Reid's statement only, to revoke the decision come to and reappoint Mr. Porter? I took occasion to write to Mr. Reid to see if he intended that passage to be so construed, and I have had an answer from him saying that he had not.

Mr. HARDY: Certainly not; he is quite independent of any consideration of that kind.

Mr. IRVING: It has also been insinuated that I threw upon Mr. Porter the whole responsibility of the outlay by extensions. Now, I did not do so. What I did say was, that when it was set forth as a claim in favour of Mr. Porter that the gas was good, I reminded the council that this good gas had been obtained at an expenditure of £6000. But, while I said this, I did not say the committee had not sanctioned the expenditure. Now, with regard to the gasholder, I say again that several minutes connected with the Gas Committee's proceedings, somehow or other, have got into the hands of one of the papers in the town and how these proceedings got into their hands, they, perhaps, will able to to inform us in their next issue. I cannot find, from inquiry instituted at the gas-works or from any member of the council, how their purpose has been thus served; therefore the conclusion I have arrived at, along with my colleagues, is that that document was supplied by a dismissed and discarded servant, at the instance of the conductors of that paper. How far such conduct is creditable to the conductors of that paper, it is not for me to say. Well, then, I see reference has been made to the gasholder by some of the speakers at the meetings which have been held. I am prepared to prove that, if Mr. Porter had not been controlled, a further expenditure of something like £5000 would have been incurred. Mr. Porter got a committee appointed to make inquiries on the subject, but, with the exception of one meeting, that committee had no active existence, because they were perfectly satisfied—notwithstanding that Mr. Reid, inspired by Mr. Porter, referred to it in his report—that the gasholding power was, under proper management, sufficient for some years to come; therefore they set their faces against any resolution authorizing the erection of an additional gasholder, or even a tank, or ground being bought for the purpose. Mr. Porter had gone so far as to commence negotiations with Mr. Brockbank to put a tank upon certain parts of his property, and in a very short time we should have had some nice negotiations with Mr. Brockbank as to the sale of a portion of his land. I hope the disappointment experienced by Mr. Brockbank on this point has not made him less scrupulous in his conduct with regard to the committee. Now, another objection out of which a great deal of capital was made at a meeting in the Athenæum the other night, was a resolution passed on the 8th of January last, and authorizing the cutting off of gas from consumers who were behind in their water accounts. I must tell you, with regard to that, that Mr. Porter, without ever consulting the committee, took upon himself that step; and when he found he had got in a mess, he came and consulted me on the subject. I then told him he was too late, and ought to have come for advice in time. The matter came before the committee, and they felt that they were under an obligation to confirm the acts of their servant, seeing that legal proceedings were pending, and to do otherwise might have

militated against their success in those proceedings. But, at the time, the resolution was not passed without strong condemnation and censure upon Mr. Porter for his conduct. Now, I observe, sir, it is also stated by Mr. Lattimer, who has adopted the *sobriquet* of "Fairplay," and considered of sufficient importance to be inserted into a leading article of the *Journal*, that the committee have done Mr. Porter an injustice with regard to the weight of the syphons. I beg to tell those gentlemen who made this statement that such a charge was never made against Mr. Porter. I have often had my suspicions that the writer of the articles in the *Journal* never read the evidence, and I am satisfied in my own mind that the person who wrote the articles was totally ignorant of the evidence; if it were otherwise, the making of a charge of this kind against the committee was, I must say, very unfair. Now, sir, we have had a great deal of boasting about the force of public opinion as set forth in the various meetings which have been held. We have had these *demonstrations* in various shapes and forms—we have had them in school-rooms, in taverns, and in public lecture-halls. You will be quite aware that all this movement has been on one side. We relied upon the wisdom of the council, and of those qualified to judge of our actions, as to the justice of the case that we had in hand; we relied on those alone as our safeguard and strength in the matter. I think we have here sufficient reason for maintaining our position, and resisting the power organized, and all the attacks made upon us. Now, sir, there was a meeting in Caldewgate, and the name of the gentleman who occupied the chair on that occasion I cannot find as a consumer of gas; therefore, so far as pecuniary loss is concerned, he cannot suffer whether Mr. Porter or anybody else manages the works. I say that that meeting did not represent one-twentieth part of the citizens of Caldewgate, and I am told a great portion of the audience consisted of half-waxed lads. A demonstration took place in Botchergate, and I am given to understand by a gentleman who took the numbers that there were not more than 150 citizens of Botchergate in that meeting. I think it may be taken as showing very clearly the scarcity of numbers as well as talent at that meeting, when they where obliged to eke out their speaking power by getting the assistance of a person, who is not a resident in the ward, to take charge of one of the resolutions. I thought Mr. Cockburn overstepped his duties as chairman when he sat and listened to a gentleman quoting a statement from Mr. Robinson's speech at this council on behalf of the auditors, and which, it was said, was corroborated by me, when Mr. Robinson had himself repudiated such statement so far as regarded his co-auditors. Now, sir, we come to the meeting at the Athenæum. I happened to see the chairman of that meeting in the market on the day following the meeting, and in the presence of his cousin (Mr. Richard Brockbank) he was telling what a success the meeting had been. I asked him if the meeting was an influential one, and if so, they had failed to make it known in the second edition of the *Journal*. Mr. Brockbank replied that it was a very important meeting, as well as a very enthusiastic one. I said it must have been considerably short in the number of people of influence and standing. Of course, of the four gentlemen who moved the two resolutions I know one only by repute; the other three gentlemen I do not know at all; but I have since ascertained that Mr. M'Vittie, who was very severe upon me, does not appear on the citizens roll. Two of the gentlemen are gas consumers (Mr. Brown and Mr. Etchells), but the only knowledge of them that I have is as to their gas consumption, the account of one of them being 2s. 9d. and the other 10s. 3d. for the last half year. One gentleman, who sent an apology for not being present, and with whom I shall probably have to deal afterwards, consumed gas for the last four years to the extent of 5s. 9d., 3s. 4d., 5s. 5d., and 4s. 3d. respectively. Now, sir, I took the opportunity of asking the chairman what number of gentlemen of standing and position were at the meeting. He fenced the question, and I then repeated it, whereupon he answered that the meeting was not an expression of a majority of the sound judgment of Carlisle. Mind, the chairman's cousin was present when this took place; and I understand his cousin on two occasions put to him a question whether, if he had a foreman in his employment who had acted as Mr. Porter had done towards his employers, he would keep him in his employment. I understand from his cousin that he never had been able to get an answer to that question. I am told also that Mr. John Brockbank stated to one gentleman in this town that he considered Mr. Porter an unfit man for the post. Now, sir, I see Mr. Brockbank has taken upon himself to say as justification for supporting Mr. Porter, that the half year's accounts about to be issued would show a saving of at least £400. I was so much startled at this statement that I directed the clerk to take about 100 accounts indiscriminately, and endeavour to arrive at something like an average. He found that out of 141 accounts, on the aggregate, there was an increase of some 5 to 6 per cent. over the accounts of the Christmas half year, as compared with the same time in 1868. Therefore I wrote to Mr. Brockbank to ask him upon what authority he had made such a statement, and I have received since I came into the town-hall the following reply:—

Carlisle, Jan. 11, 1870.

Dear Sir,—I have much pleasure in giving you the information you request. My authority for the saving of £400 in gas is the records of the quantity of gas in the Gas Committee's own accounts, as principally indicated by the meter. The following are the comparisons:—

	Cubic Feet.
Gas consumed from July 1 to Dec. 19, 1868 . . .	40,017,334
Gas consumed from July 1 to Dec. 19, 1869 . . .	37,256,004
A saving of	2,761,330 cubic feet.

which, at 3s. per 1000 cubic feet, will give a saving of £414 3s. for 172 days. If, in addition to this, is taken into account the average ratio of increase in the extension of consumers, and the fact that betwixt the 19th and 31st of December the heaviest consumption of gas occurs, the actual saving to the gas consumers (independently of the public lamps) must approach £600. As to your other questions, I have equal pleasure in giving you the information. Mr. Robert Watters was the councillor who was refused a sight of Mr. Reid's report, and Mr. John T. Cockburn was the member of the Gas Committee who was refused a sight of it.—I am, &c.,

John Irving, Esq. JOHN BROCKBANK.

After all the accounts are got in it will be seen whether Mr. Brockbank is verified in this or not. I say that the returns in the books of the Gas Committee are not to be relied on for this purpose, because from the way in which they were managed by Akines, under Mr. Porter's directions, we have reasons to believe that the returns for coal used and gas consumed were not correct. I do not believe Mr. Porter was to blame, but the man who made improper returns. The accounts of the 141 persons to whom I have referred amounted, for the half year ending Christmas, 1868, to £813 15s. 2d.; this half year the accounts of the same persons amount to £865 14s. 5d., showing an increase of £51 19s. 3d., or something like 6 per cent. Taking the chairman's statement of the meeting at the Athenæum, it did not show a majority of the sound judgment of Carlisle. Mr. Brockbank admitted, in his speech, that the Mechanics Hall meeting was nothing compared to the Athenæum one; therefore, to judge from Mr. Brockbank's own admissions, I hold that the meetings have not been a fair representation of the public opinion of Carlisle. I see in the papers this morning a correspondence published between Mr. Brockbank and myself. I took leave to speak to Mr. Brockbank on the Station Brow, on my way to the gas-works, in company with the two gentlemen about to conduct the inquiry into the accident, about the meeting in the Mechanics Hall. I pointed out to him, that out of the 33 names reported as being presented, 13 held opinions totally adverse to the resolutions adopted at that meeting; therefore, taking that as an indication of the feeling of the meeting—taking the most favourable view of it—only two-thirds of the 600 present were favourable to the object of the meeting; therefore I contended that it formed no indication of the opinion of the citizens of Carlisle. Now, sir, I take leave to differ from all the grounds set forth in the memorial upon which we are asked to reverse a decision already come to. I hold that irregularities of such a character as Mr. Porter has been guilty of are such as to entitle him to forfeit the confidence of the committee and council; and I hold him, independently of the irregularities, from the experience I have had of him along with others, to be incompetent for the discharge of his duties. There is nothing, perhaps, which touches people more keenly than that which affects their breeches pockets; therefore I ask you to bear with me while I point out what Mr. Porter has cost the town since his appointment as manager, and which might have been saved, assuming Mr. Richardson had lived, and Mr. Porter had not been appointed to his place. We have, in the first place, extra gas bills for the year ending Christmas, 1868, amounting to £700; then we have the additions to Mr. Porter's house, £156 17s. 6d. (whilst it was contemplated the alterations would only cost £30); and we have the salary paid to Mr. Akines—a man totally unfitted for the post—£164 11s. 9d., whilst there were men in the works as capable of doing the work with only a salary of 16s. or 17s. per week. Another important thing—a thing never known to the committee, and a thing almost unknown in any gas-works—is the total suspension of the works on Sundays. I dare say that statement will horrify certain parties in the town; but, rightly or wrongly, Mr. Porter had no business on his own responsibility to so alter the mode of conducting the works. We have had retorts, by Mr. Porter's arrangements for 13 hours, for keeping up to the proper mark, cost over £200 a year. I state this advisedly, because I have gone fully into the question. The retorts were charged at twelve o'clock on Saturday night, and remained so till eight o'clock on Sunday night, being 14 hours in over drawing. Thus, a great quantity of gas flew through the premises and was lost. It was also ascertained, last Sunday night, that 40,000 feet of gas was wasted, which would in ordinary circumstances have been saved any other night during the week. The gas so made on the afternoon of Sunday was of a very bad character. You know the quality of the gas we aim to give to the inhabitants is from 17 to 18 candles, but the gas on Sunday afternoon did not indicate 10 candles according to the test. Now these sums make a total outlay of over £1200 cost to the town over and above that which it would have had to pay had Mr. Richardson lived, and had Mr. Porter not been in his place. Looking at these things—that the man Akines was totally incompetent for the post he held, and that he was brought there to guide Mr. Porter—I hold that Mr. Porter himself was incompetent for the office. It was said the committee had the matter under their own control, and that they need not have had Mr. Akines. Mr. Akines was imported into the works on a month's trial, as there were retorts to be set up. He was afterwards continued for some period, and though the committee were very dissatisfied with him, Mr. Porter persisted in keeping him, as there was no man of experience, he said, equal to the task. I had occasion to write the other day to Mr. Douglas, manager of the Newcastle Gas-Works, to ascertain if it was their habit to close their gas-works on Sunday. He wrote me as follows:—

Gas-Works, Low Elswick, Newcastle-upon-Tyne, Jan. 3, 1870.

Sir,—Your favour of the 31st of December is at hand this morning. Our retorts are charged on Sundays the same as on other days of the week. We make no difference on Sundays.

Our men are paid 34s. a week; and if they do not work on Sundays 4s. 10d. is kept off, and another put in the place.—I am, &c.,

R. DOUGLAS.

I wrote to nine different gas-works on the same point, and, in effect, got the same reply. Quite unsolicited, for I am a perfect stranger to him, Mr. Douglas also sent me the following in a letter:—

Gas-Works, Low Elswick, Newcastle-upon-Tyne, Jan. 8, 1870.

Sir,—In reply to yours of this day's date, I am sorry if I conveyed a wrong impression in regard to Akines. I said that I did not recommend him as a suitable person. I told Mr. Porter that I had not any one suitable, but as he wanted one of some description immediately, we tried one of our under-foremen, but he would not accept, and then Akines was the only choice; and he went on a month's trial, or until another could be got. I have nothing against his character; he was foreman here for about six months previous to my coming here, but as the work did not go on to my satisfaction I engaged one of my former staff to come from London in July. During the past summer I was applied to for a certificate, to say he was a competent person, but I did not give any, as I could not say so to his friends, and I would not say so to his enemies, as it was not my business to do so. However, I have nothing against him in regard to his character. He was known to me as a "retort-setter."—I am, &c.,

R. DOUGLAS.

Afterwards Akines got ingratiated into Mr. Porter's favour, and was placed over the whole of the men in the place, to undertake duties of which he was totally ignorant. To this mode of procedure I attribute the bad character of the gas supplied last winter, because if you read Mr. Reid's first report you will see that he does not say the mode of purifying was bad. When Akines got charge of the purifiers he neglected the changing of them, and sometimes did not change them for five or six weeks. Well, I think I have satisfied you that, so far as Mr. Akines is concerned, he was not fit for his post, and that Mr. Porter was not capable of conducting the gas-works; hence the expenditure incurred. If Akines knew little, Mr. Porter knew quite as little or less, because it was his duty to make himself acquainted with the qualifications of a man for such a post as that held by Akines. The men about the place dared not open their mouths to Mr. Porter about what was going on, fearing they would get notice to quit the next day. Well, I think I have gone through all my notes. If there is anything which I have omitted to say, I shall be very glad to answer it on it being put to me. I beg to move, sir—"That Mr. J. Hepworth, of Brighouse, be appointed manager of the Carlisle Gas and Water Works, at a salary of £200 per annum, upon the terms contained in the statement of duties prepared by the Gas Committee."

Mr. HODGSON seconded the motion, and, in doing so, proceeded to disabuse Mr. Porter's mind as to one statement which had been set forth, and which was repeated in a leader in the *Journal*. He wished to deny having charged Mr. Porter with having attempted to blow up the gas-works, although he had found fault with Mr. Porter being in the purifying-house at the time of night when he was there. No doubt it had arisen in consequence of his tampering with the boxes. He did not say it had been wilfully done; he believed the man was confused, and did not know what he was doing. He further denied that he had received information about the weight of the syphons from Messrs. Lees and Graham; he had received it from one of the auditors.

Mr. COCKBURN was the next speaker, and, in the first place, with reference to Mr. Irving's remarks as to the signatures to the memorial, said they had been obtained by voluntary agents in their spare time, and he believed the memorial to be a genuine requisition signed by the citizens of Mr. Carlisle. As to the other query, he could not answer it, as he never saw the memorial until that morning, when it was handed to him by Mr. Brockbank. With regard to the correspondence between Mr. Irving and himself, he adhered to what he said in those letters—that Mr. Irving had acted in an unjustifiable way in withholding an important document bearing upon the question. Mr. Irving had said that he had withdrawn all personal imputations upon him, and that Mr. Irving was satisfied with that explanation. He begged to say that was a misstatement. The last paragraph in his last letter was what Mr. Irving had complained of. In that he attributed nothing to Mr. Irving but assuming that he had a right which he contended Mr. Irving had not. With regard to the Botchergate meeting, he stated that there were upwards of 400 people in the room, and from an intimate knowledge of the ward he expressed his firm conviction that 300 of them were burgesses of Botchergate. As to stopping a speaker who was making certain references, he denied that it was the province of a chairman to do so. Turning from personal matters to the main question, he said that in these days of household suffrage it was very undesirable that an influential requisition like that which had been presented to-day, should be treated in the manner in which it had been treated. There

were many people promoting Mr. Porter's cause who were of opinion that his first appointment was wrong; but he need not enter into that. What they had to deal with was Mr. Porter's irregularities as shown in the printed evidence laid before the council. Those irregularities, as he had said before, did not justify the course which the council had adopted.

Mr. Hardy next rose to address the council, and on his rising the signal was given for loud applause from the body of the hall, whereupon

Mr. Irving said: I understand there is a body of men from Porter, Hinde, and Porter's in the body of this meeting. If this conduct is continued I shall ask the mayor to make an order to clear the hall.

Mr. Davidson: Such conduct is perfectly unconstitutional, and I think every sensible man among you will see it is so.

The Town-Clerk: The public are only here by permission, and should be as silent as in the House of Commons.

Mr. Davidson: I must protest against the council being overawed. We have no wish to exclude anybody if they will conduct themselves quietly.

Mr. Hardy then proposed the re-election of Mr. Porter as gas manager. He said that the committee relied upon their majority in the council, and ignored the majority outside the council. It was the majority in the council they depended upon to carry them through all their acts, painful though they were to them; that was the majority upon which the committee relied to perpetrate one of the grossest iniquities that he had ever been connected with in his life. Referring to the testimonials of Mr. Hepworth, he said they called him a respectable man, who wore respectable clothes. They did not say anything as to his genius, or anything to lead them to believe that he would put the gas-works in a proper position. The testimonials were mere trumpery things, such as might be given to an agricultural labourer. Turning to Mr. Irving's remarks, he replied to some of them, and wanted to know why Porter, Hinde, and Porter should be ostracized—why they should be put out of the pale of society among other ironfounders in the town. Having referred to the honourable testimony given by Mr. Hodgson as to the syphons, he expressed a hope that the meetings of the Gas Committee would in future be reported by the journalists, the same as the Health Committee. Adverting to the additional irregularities, as pointed out by Mr. Irving, he asked that gentleman to read the whole of the items in the bills.

Mr. Irving: Do you wish to have them?

Mr. Hardy: Doubtless they contain some villanous charges. [Here Mr. Irving handed to Mr. Hardy the bills in question, and after some questioning they were handed back.] Resuming his remarks, Mr. Hardy referred to the Holme Head lamp, and characterized the committee's conduct as most trumpery and pottering, and as a very niggardly *quid pro quo* for the generous conduct of Ferguson Brothers with regard to Holme Head Bridge. Mr. Irving had brought out his scapula and forceps, and tried to dissect the memorial which had been presented to-day, but his surgical education had not enabled him to do it. The meeting held in the Athenæum was quite as numerous as those held in support of the Liberal members, and the council must no more think of attempting to ignere it than the higher classes, whom they fancied they had at their backs though they were very much mistaken. They must not attempt to ignore memorialists in the present day. A new generation had come up; a Conservative reform bill had put a new element into the matter. He condemned, in strong terms, Mr. Irving's suppression of Mr. Reid's report while Mr. Porter was *in articulo mortis*. Mr. Irving was urged by Mr. Forster in an almost plaintive manner; he pleaded *ad misericordiam* to let them have it, but all in vain. He had never seen Mr. Irving act so disingenuously in all his life. Mr. Porter, he argued, was not to be blamed for the defects in the apparatus, which, though in such a state that it enabled Mr. Richardson to tide over with it, came in its intensity when Mr. Porter came to the fore. With regard to Mr. Brockbank's data as to the saving during the past half year, he contended that the readings of the meter were more reliable than any selection of isolated cases. At some length he defended Mr. Porter with regard to Sunday labour and the heating of the retorts, charged Mr. Irving with introducing a technical subject without being able to explain it satisfactorily, and read the following at the request of Mr. Irving:—

42 retorts charged at 12 o'clock on Saturday night and remain so until 8 o'clock on Sunday night, being 14 hours in over drawing.

40 retorts charged at 2 a.m. on Sunday morning and remain so until 9 o'clock on Sunday night, being 13 hours in over drawing.

40 retorts charged at 4 a.m. on Sunday morning and remain so until 12 o'clock on Sunday night, being 14 hours in over drawing.

From the above I find that the whole of the 122 retorts stand idle for 133 hours out of the 24 hours, during which time they take 111¼ cwts. of coke to keep them up to the proper heat.

He next animadverted upon Mr. Caleb Hodgson's conduct towards Mr. Porter with reference to the stoppage of the gas-works on the 8th of December, and said that he should certainly have felt inclined, if gentlemen had not disclaimed it, to have felt that there was a deep current of malignity running through the whole proceedings.

Mr. Hodgson: I can prove all I have said.

Mr. Hardy, in conclusion, proposed Mr. Porter's re-election, exclaiming, "*Fiat justitia, ruat cœlum.*"

Mr. Aikin seconded Mr. Porter's re-election, observing that he was fortified in this course by four or five different meetings of his fellow-citizens.

Mr. R. Armstrong said he had no intention of taking part in this meeting, but from what had transpired during the time he had sat there, and from what had fallen from Mr. Hardy especially, he felt constrained to make a few observations. He wished to give an explanation as to why he voted on the side of the committee. He was sorry to see so many, with whom he had been in the habit of being at one on public matters opposed to him, but at the same time his conscience made him adhere to what he felt to be right. What made him feel doubly implicated in this affair was, that he was not only a member of the council, but that he had sat upon the committee who investigated the case, and had devoted a great deal of time to it, and the conclusion he had come to had been arrived at deliberately, carefully, and conscientiously, and he would add—notwithstanding what had fallen from Mr. Hardy at the last meeting—with great pain.

Mr. Hardy: I accept it.

Mr. Armstrong said one reason why he now stood up was, that it had been thrown in the face of the committee that they had been influenced by a shake of the head and a shrug of the shoulder. It had been so stated in the public prints—in letters and leading articles in one of the newspapers of the city. Now, for himself—and the same remarks applied to the other members of the committee—he could say that he was as independent of Mr. Irving as any member of the council. He had not been influenced in the least; and, to show that he had taken an independent course, he might mention that on one occasion when the witnesses were under examination—and he thought Mr. Irving was rather too severe upon two of them, in pressing them as to why they did not question Mr. Porter with reference to the sending out of the old iron on the Saturday—he took exception to the conduct of Mr. Irving, because he thought they had gone quite as far as they could have gone with reference to the irregularities. He therefore spoke up and told Mr. Irving that he was pressing the thing a little too far; and the committee would bear him out in the statement. A great deal had been said about the chairman having been influenced by personal feelings. Now, he was on the committee long before Mr. Irving was made chairman. He was there during the time Mr. Hodgson was chairman, and also during that of his successor, Mr. Creighton; with very few exceptions he had been present at every meeting of the committee previous to Mr. Porter's dismissal; and he could testify to all Mr. Irving had said in self-defence with reference to his conduct towards Mr. Porter. He maintained that Mr. Irving had displayed a greater amount of forbearance, kindness, and courtesy towards Mr. Porter than he could have looked for, even in a man of kinder feeling and warmer temperament than Mr. Irving was supposed to be. He did not mean by that to say that Mr. Irving was a harsh man; quite the contrary. It seemed to him (Mr. Armstrong) that, when the irregularities were pointed out by the auditors, they had a very grave appearance, and the public at once assumed that they were going to convict Mr. Porter of dishonesty. Well, the committee got orders from the council to take evidence. In carrying out their instructions, many things came before the committee which, as men of business—employers having every opportunity of seeing how business ought to be conducted—they believed had not been done according to the ordinary way of conducting business correctly. When these matters came up, and they inquired into them, he for one thought it would have been well to have taken evidence, and reported upon it; but it was decided otherwise. The committee thought it was only right to report on matters the auditors pointed out, and leave the others as they were, because if they went into one matter they might go into many, and there would be no end of it. The report was completed, and he differed from the chairman with reference to giving an expression of opinion upon it. He thought all along that they ought to have expressed their opinion upon it either by resolution or in some other way; but it was thought otherwise, especially by the chairman, because he thought it was not advisable to give the public an opportunity for saying that he was revenging himself for any previous ill-feeling between Mr. Porter and himself. But by the time the report was circulated it came to the ears of the committee that dissatisfaction existed outside because they had not presented a report. They met on the night preceding the council meeting, and it was with the very greatest difficulty that they got the chairman to consent to be the medium of conveying their resolution, simply because he did not wish to give the public ground for saying he had wished to satisfy his revenge upon that man. At last he consented; the resolution was framed, but in framing the resolution care was taken not to do anything to hurt Mr. Porter's feelings, and to make his fall as light as possible. In the course of the discussion in the council on the following day the question of honesty was raised, and one of the auditors volunteered on his own authority to state that the auditors desired to free Mr. Porter from any imputation of dishonesty. That was right enough. Mr. Irving endorsed that to a certain extent—and then the public—who had started with the impression that it was only dishonesty that Mr. Porter was charged with—turned round and said they were condemning the man on that document. That was not the case. The resolution was—"Taking all the circumstances into consideration"—that was, all the circumstances that had come before the committee—and as men of business they came to that conclusion. Of course men had the right to differ from them; but he must protest against Mr. Hardy, whom he had respected all along, criticizing the testimonials of the man whom they had recommended as Mr. Porter's successor in the way he did. It was unwarrantable. What would the men think who had given him testimonials?

Mr. Hardy: They will think as I do, very likely.

Mr. Armstrong thought also that it was wrong, both on the last occassion and this, to treat as he did what Mr. Irving said about his feelings. He believed Mr. Irving felt it deeply. Although there were gentlemen opposed to him whose opinions he respected, and whose conduct he admired in every way, yet he thought that, as a member of the committee who had bestowed some pains upon the inquiry, perhaps what he had to say ought to go for something.

Mr. Watters suggested a compromise. Mr. Irving attempted to ignore the public meetings that had been held, and he reminded Mr. Irving of a former occasion when the electors had walked him out of the council. He was convinced that the ward which he himself represented were five to one opposed to the action of the Gas Committee. He complained of Mr. Irving's insinuation that it would be cruel to think that he could write the letter which had been published; for he could do his business as well as Mr. Irving, and perhaps better.

Mr. Graham: Did you really write the letter?

Mr. Watters (warmly): Yes; I can do my business as well as Mr. Graham or Mr. Irving, who insinuate that I cannot write a letter.

Mr. Davidson rose, and Mr. Cowing also rose shortly after him; nevertheless, Mr. Davidson gave way.

Mr. Cowing advocated the postponement of the matter for a fortnight, adding that as to the testimonials of the man recommended, he had known a policeman seeking to be an officer come with a better character than that, but did not get on after all.

Mr. Davidson, who was received with mingled applause and hooting in the body of the hall, said no attempt made to bring clamour against him would drown his voice. He was acting there conscientiously as the representative of a ward in the town, and no clamour outside should close his mouth. It was only a sense of justice to a gentleman who had been grossly abused—and that abuse had been reiterated to-day, reiterated in this council over and over again—that induced him to rise. Since the committee of investigation was appointed he believed he had been present at every meeting but one; and therefore he had had an opportunity of knowing, and appreciating, and judging of the conduct of the chairman. During the whole proceedings Mr. Irving had acted impartially and straightforwardly; and he repudiated and condemned with indignation the charge brought to-day of gross malignity on the part of Mr. Irving, and those who were acting with him. He must say that if Mr. Irving had a fault at all it was too much leaning to Mr. Porter. He could endorse every word which had been so properly said by Mr. Armstrong as to the impartiality of Mr. Irving. It required a great deal of tact and courage on Mr. Irving's part to conduct the business as he had done. He was always in the front as the mouthpiece of the committee, and, at the same time, receiving all the abuse that could be heaped upon him. During the whole inquiry Mr. Porter never made a single complaint against Mr. Irving for partiality—never until his final dismissal did he make any complaint. In fact, he told one person that Mr. Irving was the only gentleman on the committee.

Mr. Hardy: Akines.

Mr. Davidson said that with regard to the general matters he could not conscientiously come to any other conclusion than he had done, for Mr. Porter's conduct at the gas-works was such as to make him forfeit all claim to the confidence of the committee; and he held it would be for the interests of the city if the connexion between Mr. Porter and the committee ceased. He came to that conclusion on the completion of the inquiries, and nothing which had been said since had shaken the justice of that conclusion. Continuing his remarks, Mr. Davidson in most emphatic terms condemned Mr. Hardy's unwarrantable and unfair expressions with respect to the committee and Mr. Irving, and said the charge against the Investigation Committee amounted to this—that they had conspired together to persecute Mr. Porter, and get him dismissed, for the purpose of enabling Mr. Irving to carry out an old grudge. He most indignantly repudiated such a charge. The opinion of one of the auditors as to the manner in which Mr. Irving had conducted the inquiry was shown by the following letter:—

Castle View, Carlisle, Dec. 10, 1869.

My dear Sir,—In reply to your note received this morning, and in reference to our conversation on Saturday evening, I beg to state that at the first meeting of the city auditors and the Gas Committee, relative to the irregularities at the gas-works, in my opinion, Mr. Irving, as chairman, conducted the inquiries not only with very great tact and cleverness, but with the utmost fairness towards Mr. Porter. Another gentleman, who was present at the examination, in remarking afterwards to me on the ability displayed by Mr. Irving on that occasion, said that the evident leaning of Mr. Irving towards Mr. Porter was perfectly unaccountable. I then stated what I have already said now—

that I considered Mr. Irving's conduct on that occasion perfectly unimpeachable.—Believe me, yours very truly, JOS. HANNAH.

Alex. Davidson, Esq., Carlisle Bank, Carlisle.

He condemned Mr. Hardy for calling a gentleman whom he had never seen (Mr. Hepworth) a clodhopper.

Mr. HARDY: I did not call him a clodhopper. I said his testimonials were such that a clodhopper could get.

Mr. DAVIDSON held that most inflammatory language had been used on this occasion, both in that hall and by the press—in the *Journal*. In conclusion, Mr. Davidson cautioned members of the council to be careful—particularly when this matter has assumed the shape it has—what language they used.

Mr. IRVING replied. He pointed out, in reply to Mr. Cockburn, reasons for not stopping Mr. Anderson quoting from a speech of Mr. Robinson's, repudiated by the auditors on the ground that it was open for his opponents to refer to it, and contended that those opposed to the Porter movement felt themselves precluded from attending if the chairman was to be guided by the rule laid down by Mr. Brockbank at the Mechanics Hall, and refuse to hear opponents. He considered that the Mechanics Hall meeting was unfairly conducted, and complained that the chairman put it to the meeting whether a speaker should be heard, when he knew that the majority of the meeting was against the speaker. Mr. Brockbank's duty as chairman was to have left the chair if the audience would not give every man a fair hearing. The committee, he contended, had exercised forbearance and shown charity, and had received punishment for it. That was the sort of gratitude which had been exercised towards them. He ridiculed the idea that there were charges against Messrs. Porter, Hinde, and Porter, and Messrs. Ferguson Brothers. Mr. Porter was alone to blame in the matter; and he was only sorry that the name of a most estimable man—Mr. Robert Ferguson—had been so freely used; he believed without his consent. Continuing his remarks, Mr. Irving replied to Mr. Hardy's remarks as to the closing of the gas-works on Sunday, rebutted Mr. Cowing's remarks as to Mr. Hepworth's present salary, denied emphatically that he had sneered at the public meetings, said the meetings which had been held were not a fair expression of the opinion of the people of Carlisle on this question, and observed that when the time for his retirement arrived he should be ready to meet his constituents, confident that the ward would not get any one to serve them more faithfully or make greater sacrifices than he had done. He regretted that on this subject he had been brought into collision with many he might call personal friends; and that those upon whom the mantle of a man had fallen, whose wise counsels once guided the deliberations of this assembly, should be obliged to resort to the assistance of Mr. Porter and his friends. The discussions on this question had been misrepresented, and speeches garbled for the purpose of creating a false impression. Abuse had been thrown on men who had held the highest office in the corporation it was in its power to confer, and he was grieved that those who bore the name of a man whose memory he revered should have to fall back on such an alliance, and should be guilty of conduct of this kind. He should conclude by quoting from the late Mr. Burke, when member for Bristol, words uttered under circumstances similar to these. "It is the duty of your representative," said Mr. Burke, "to sacrifice his repose, his pleasures, his satisfactions, to yours; and above all, ever, and in all cases, to prefer your interest to his own. But his unbiassed opinion, his mature judgment, his enlightened conscience, he ought not to sacrifice to you, to any man, or to any set of men living. He owes you, not his industry only, but his judgment; and he betrays, instead of serving you, if he sacrifices it to your opinion."

A division was then taken, when there appeared—

For the amendment	9
Against the amendment	25
Majority	16

The amendment was therefore lost, and Mr. Porter again defeated.

Mr. COWING moved, and Mr. J. SCOTT seconded, an amendment, that the meeting be adjourned for a fortnight.

Mr. BENDLE supported the amendment, as did also Mr. HARDY, who said the council was acting *ultra vires*, which was not a right thing for it to do.

Mr. IRVING: Does it not strike you, Mr. Hardy, that you are condemning a course you pursued yourself? You proposed a man for election, and in justice to those who proposed the other man you ought to allow the same course to be taken.

On a division, the amendment of Mr. Cowing was defeated, the voting being in the same proportion as in the previous division, with the exception of Mr. Bendle, who voted for the amendment, thus making the majority 24 to 10.

The motion for the appointment of Mr. Hepworth as manager was then put and carried, the numbers being—

For the appointment of Mr. Hepworth . .	25
Against the motion	9
Majority	16

The council then adjourned, having sat for six hours.—*Carlisle Express.*

METROPOLIS WATER SUPPLY.

METROPOLITAN BOARD OF WORKS.

On Friday, Dec. 17, 1869, the Board—Sir J. THWAITES in the chair—resumed their consideration of the report from the Works and General Purposes Committee, on the subject of a constant water supply to the metropolis, which stated that in the opinion of the committee a constant water supply to the metropolis was most desirable, and recommended that the chairman be requested to seek an interview with the Home Secretary for the purpose of inquiring if it was the intention of the Government to bring in a measure founded upon the report of the Royal Commission, and also to place before him the board's general approval of the report.

Mr. FREEMAN said there could be no doubt that the obtaining for the metropolis a pure, abundant, and constant supply of water was a very large subject, and he very much regretted that Mr. Collinson, the chairman of the committee, was not present to bring up the report. This subject was under the consideration of the board two or three months before the Crown issued a Royal Commission to inquire into it. They thought it would be proper to suspend that inquiry until the commission presented its report. That report was made, and was a very full and complete one. It was for the board to determine, in the first instance, how far they could agree with that report, and if they could adopt it in the main. They should then put themselves in a position to help in any way the bringing about so desirable a result as the carrying out of this recommendation, and obtaining for the metropolis a constant supply of pure water. The first thing they had better consider was as to whether they agreed with the commission in rejecting the great projects brought before them by various engineers, such as the bringing water from the lakes, and so on. He thought, after going through the evidence, they might very well agree with the commission in recommending that the metropolis should not attempt to carry out any of those projects. In the first place, they would require an enormous capital. In the next place, it was not desirable, if they could avoid it, to have to depend upon one source of supply, for if any unforeseen accident took place the metropolis might be suddenly cut off from its supply of water. Then such a project could not be carried out without very largely endangering certain districts. There must be very large reservoirs indeed, and if any accident should occur to one of these the water would sweep through, and cause destruction far and near in the particular locality. On the ground that all these risks and damages would be run, and that it was not necessary that they should be incurred at the present time, he thought they might fairly agree with the commission not to recommend any one of these projects. They might do so without hesitation, because the commission had abundant and satisfactory evidence that from the valley of the Thames and the Lea, by somewhat altering the channel of the river, and increasing its storing capacity about Henley and Oxford, they might obtain a supply that might be depended upon without any doubt. The evidence showed that, by certain works being carried out, the storing capacity of the Thames might be increased, and an abundant supply of pure water obtained. According to the most precise calculations made, all the water which could be possibly supposed to be required for a number of years to come might be obtained from that source. Joining, then, the fact which the evidence proved, that they would, from the valley of the Thames and the Lea, and the chalk hills surrounding the metropolis, be able to have an abundant supply of pure water, with the anticipation of the difficulties and dangers that would beset one of the large and gigantic schemes proposed, he thought they might come to a very sound conclusion that it was not their duty to countenance or take up any one of the great schemes put before them by any of the engineers at the present time. The great object, of course, in the first instance, was to see clearly if they could obtain from the valley of the Thames and the Lea a full supply of good and pure water. If they perused the evidence given by the engineers before the commission, they would see very clearly that, by altering the course of the Thames about Henley and Oxford, they would largely improve the land abutting on the river on both sides. For instance, at Oxford there was a considerable quantity of land lying very low—swampy, and unproductive of herbage. The soil taken from the river, if it was widened, would be placed on that land, raise it, and largely increase its value. Hence they might fairly levy a contribution on the owners of the land, to assist the public funds in increasing the storing capacity of the river. Then as to the question of purity. It was estimated that the water of the Thames was pure and good. There was some more doubt with regard to the water coming from the valley of the Lea, especially when the temperature of the atmosphere was very high, and during droughts. Unquestionably they would have to intercept the sewage now coming from many towns and flowing into the Lea. They would also have to take other means for storing, filtering, and improving the water; but the great thing would be to prevent sewage matter, and matter of every kind, flowing in. Having cut that off, and increased and improved the course of the river and the storeage capacity, it was considered that there would be a largely increased and improved supply, sufficient for all the requirements of that part of the town for many years to come. Then, on the other side, they had chalk hills which might be tapped and made to yield a very large quantity of water—good pure water of excellent quality. There was, therefore, no cause for alarm, or any reason to doubt for a single moment but that they would have an abundant supply of water from these various sources, and not have to take up any such gigantic projects as had been proposed. The next point was the question of a constant supply. That was a question that had, perhaps, been more debated than almost any other; but when they calmly considered the evidence given before the commission, he thought they would agree that there were really no difficulties whatever—no more difficulties than must pertain to the change of any system, whether bad or good. It was just so when Parliament agreed that cesspools should be abolished in the metropolis, and landlords were compelled to provide closets and cisterns. That was a demand for a much larger expenditure than they for one moment thought of calling upon them for now. All that would be necessary was that they should provide good strong stout pipes, instead of the weak and imperfect ones now in use, and taps and cocks of the best quality. That was all they would have to do. In order that the inhabitants of the houses might have a constant supply of pure water, they would not put the landlord to more than one tithe of the expense that he was put to when cesspools were abolished. With regard to the difficulties of establishing a constant supply, Mr. Dale, the engineer to the Hull Water-Works, where the constant supply system had been introduced, was asked whether they found any difficulty whatever with regard to it. "Have you experienced any inconvenience arising from constant supply?" "None at all; far from it." On the one side they had an intermittent, and on the other a constant supply, and here was a practical man saying that there had been no difficulty, and that it really led to a saving of 20 per cent. of water. Sir J. Heron, of Manchester, gave evidence of a similar character, and the tenor of the whole seemed to be that they had met, he did not say with no difficulties at all, but with no considerable difficulties in the matter, and that, instead of its leading to a waste of water, it had led to a saving. On turning to the evidence of the great engineers—such men as Hawskshaw and Bateman—he found that they fully endorsed the evidence, and stated that, with proper supervision, there was a considerable saving to the companies. Any one who would take the trouble to read the evidence of Mr. Hawkshaw, Mr. Bateman, Mr. Dale, and Sir J. Heron, would find there quite sufficient to satisfy him that there was no greater difficulty in the way of getting constant supply than must be encountered when one system was changed for another and some of the appliances had to be altered. This was a question of comfort, and, when they considered that it was of more, or at any rate quite as much importance as the other alterations to which he had referred, and would not inflict upon landlords more than one tithe of the expense incurred in the other cases, they would agree with him in thinking that they ought not to refrain for one single moment from doing anything they possibly could to bring about so great a boon to the metropolis. If they were agreed that it was not desirable to take up any one of the proposed plans, but that it was desirable to seek, at the earliest possible moment, for a pure and constant supply of water, and that there were no difficulties in the way of its being carried out, the question arose how was it to be accomplished, and did the board agree with the intimation given in the report of the commissioners, that in order to obtain this for so great a metropolis as London, the water supply must be confided to some central authority, to some corporation, some body that Parliament would entrust with the powers of supervision and inspection, and power to see that the water was not improperly wasted and allowed to run away. He thought they must come to the conclusion that ultimately this great business for the metropolis must be carried out by a corporation, a corporation who would not seek profit in any way, but would seek to cut down all the expenses now attending the great multitude of boards, officers, and engineers, which added to the cost the inhabitants had to pay for the water with which they were supplied. Though it might not be the duty of the board to take any practical step in the matter at present, it was, nevertheless, their duty to express approval of that part of the report, and to place themselves in communication with the Government, showing that they had gone through the report, and studied its various features, and stating that they approved of it in the main, and were ready to assist in any way they possibly could in carrying it out. The board were not asked to say that the power should be given to this, that, or any other corporation; that would be for the Government and the Houses of Parliament to settle. All they could do was to show that they were alive to the importance of the question, and were ready, in any way possible, to assist and aid in bringing about the consummation of so great a work. It had been stated in some quarters that all this would lead to a great and enormous loss to the ratepayers; that before they could give so great a boon to the metropolis the ratepayers would have to be taxed very largely. He ventured to think that idea was altogether an illusion, altogether a mistake, and had arisen from not having considered the way in which it ought to be carried out. If the board, or any other corporation, went forward to buy up the property of these companies, they would of course raise the money upon consolidated stock, or in any other way Parliament might direct. They would be able to raise the

money in that way, and the income from the sale of the water would pay most abundantly, interest on capital, and leave a large profit to the corporation, or allow the corporation so largely to reduce the price of the water supply that the inhabitants would be large gainers instead of losers. When it was proposed that the gas companies should be bought up after the same style, it was felt that there was just this one difference between water and gas—that gas was a property which fluctuated considerably, that in fact it might be extinguished some fine morning by some great discovery substituting some other light for the light obtained from gas. In fact, a chemist might revolutionize the world of this metropolis as to the source from which it should draw its light. To have to invest millions in a property which might thus disappear, was not particularly assuring; but, on the other hand, no one could suppose that water could by any possibility ever be dispensed with; it must be required as long as man exists, and, therefore, would be about the most enduring property they could possibly purchase. He thought, if it was done wisely and judiciously, there would be either a most favourable profit to the ratepayers, which might be expended in public improvements, or might go to reduce the price of the water; and he was sure any corporation would choose the latter mode and not the former—they would seek to give the inhabitants of London an abundant and constant supply of pure water at the lowest possible price. Having gone through the great features of the report, he thought they might fairly give a general assent to its recommendations. If they did so, it would be sound policy on the part of the board to put themselves in communication with the Home Secretary, stating, for instance, that the report was a most admirable one, that it sought a great boon for the metropolis, and that they, the board, were most anxious, in the interest of the ratepayers, to see it carried out at the earliest possible moment, and were ready to aid and assist the Government in any way they could in the passage of a bill authorizing the recommendations of the commission. He concluded by moving—That, in the opinion of the board, a constant water supply to the metropolis is most desirable."

Mr. Le Breton seconded the motion.

Mr. Shaw thought the board were premature in taking the step they were now doing. They could not altogether ignore the report of the select committee of the House of Commons which met in 1867. If they looked to the 19th, 20th, 21st, and 22nd sections of that report, they would find there was no difficulty as to the actual amount of water supply.

Mr. Richardson (interposing) said Mr. Freeman had commenced by addressing the board generally upon the whole question; it appeared now that only a part of the question was to be put, and that would prohibit members from addressing the board upon the whole question. If Mr. Freeman opened it generally, the members ought to be allowed to speak upon it generally.

After a short conversation, it was arranged that the whole subject should be discussed at once.

Mr. Shaw continued: He said the 19th section of the report of the select committee stated, "Without pursuing a minute inquiry into the causes which may affect the increase of this population, it may be assumed that if it doubled in the next sixty years, the supply of water which then would be required at the present rate per head would not exceed 100 million gallons daily." That was supposing the population doubled itself in sixty years. Section 20: "But in speculating upon any works at so distant a future, it should not be forgotten that the present expenditure, with compound interest at the commercial rate of 5 per cent., is equivalent to an expenditure of more than eight times the amount at the end of sixty years, and is subject to the risks of the works not being required at all, or not being adapted to the state of facts which may then exist." That was a caution not to run hastily into expending money for a future contingency. The 21st section says: "It is shown by the evidence given before your committee, which they see no reason to doubt, that the smallest quantity of water known to flow down the Thames at the source of supply, in the driest time on record, exceeds 350 million gallons in a day; that the maximum flow in time of flood exceeds 25,000 million gallons; whilst the daily average flow in dry seasons may be estimated at 500 million gallons." That was, taking the population as doubled, in the driest season, five times as much as was required. "If, therefore, at any future period, the increase of population should render it necessary to make provision for a greater supply of water than could be conveniently drawn from the Thames in dry seasons, it could be made by storing in reservoirs in the valley of the Thames a portion of the flood water, which now yields in a single day a sufficient supply for a whole year." He thought there was no chance of going to Parliament to ask them to extend works to increase the supply, for here was a distinct decision, on the evidence they had taken, that the supply was quite large enough at present, and a warning against laying out an enormous sum of money now to meet a want that might arise sixty years hence. As to the water being sufficiently pure, the report says: "It is right, nevertheless, to observe that chemical and other science fails to detect the presence of impurities in water, which it is said may exercise a prejudicial influence on the health of the consumer, though the presence of certain chemical substances may suggest a suspicion of other inappreciable impurities. It is, therefore, concluded that the only mode of securing water against these possible causes of danger is to prevent its being mixed with sewage or other known sources of contamination." Acts of Parliament were passed to prevent the sewage flowing into the river; and, therefore, if they went to consult the Secretary of State upon those two points, they would be referred to what the select committee had already determined, and would get no satisfactory answer. The select committee also took the question of constant supply into consideration, and said: "Your committee therefore deem it better that such questions should be deferred until the Metropolitan Board shall have had an opportunity of examining into it, and communicating with the companies on the subject, for the purpose of applying to Parliament, if necessary." The board had had no communication at all with these water companies, and if they were to go to Parliament to ask permission to lay out £11,000,000 or £12,000,000 of public money to become purchasers of these works—for that was the real meaning of it—the first thing the Secretary of State would do would be to inquire whether they had consulted the water companies, to see whether they could give a constant supply. It would not do for the board to say, "No, we have not done that yet, but we intend to do it when we get permission to purchase these works." He concluded by moving as an amendment that the board should, in conformity with the recommendation of the select committee, take an opportunity of communicating with the companies on the subject, for the purpose of applying to Parliament, if necessary.

Mr. Nicholay seconded the amendment.

Mr. Hows said the board must address themselves to this, the most important of all the questions that could possibly be brought under their attention, in a spirit of forbearance. The report of the select committee of 1867 had been referred to, but he also wished to draw attention to the report of a committee that sat some twenty years ago, under the presidency of the Duke of Buccleuch. They issued a most excellent report, upon which Manchester and other great towns took action in the very way suggested by Mr. Freeman—viz., through the municipal corporations. The water supplied to the inhabitants of Glasgow had long been of the worst description, and, acting upon the report of the committee, they set about obtaining a supply from Loch Katrine. He wished to call Mr. Shaw's particular attention to the fact that though for a little while the expense was in excess of what the ratepayers of Glasgow had paid for water, yet that they gladly paid the increased charge to obtain a sufficient supply of infinitely purer water. They would find the proceedings of the Duke of Buccleuch's committee very copiously referred to in the evidence on the table before them. After complimenting Mr. Freeman on the able way in which he had introduced the subject to the consideration of the board, he said there was one thing that he had not discussed so fully as he (Mr. Hows) anticipated—he had not gone fully into the question to show that what was proposed to be done could not be done by the companies. He left that out.

Mr. Roche: And very wisely.

Mr. Hows said it would not do to give a company powers of taxation. He admitted that it would be a most herculean task to educate the people properly up to the constant water supply, so that they might derive the greatest possible benefit from it. Two rates would have to be paid, and the power of imposing those rates could not be given to water companies; it was a power too great for any other than municipal corporations. It must not, however, be supposed, beecause he said the companies were not the proper parties, and that there must be some third parties, that therefore there was any scheme of spoliation intended. A fair compensation must be given. Vested interests must be considered. If the companies were not the parties to carry out this improved system, and some other body was, the question naturally arose which was that body. Looking to all they had accomplished, he thought that board was the proper body, at the proper time, to take it in hand. Recent events showed how well they stood in the commercial world, and although they were not going to say, "We are the board to take up this question immediately," still, to show that they were alive to the question, they must, as it were, gird up their loins, and say to the powers that be, "If you want us, here we are." They were the only body representiug the ratspayers of London, and were as cabable of carrying out a scheme of water supply as the municipalities of Glasgow, Manchester, Liverpool, Preston, or any other place. A great deal had been said upon the subject of pure water, but purity, as to water, was only a question of degree. Some things called impurities were not deleterious to the health of man; but the fact was that no water was absolutely pure. The Severn itself was very turbid, and when there was an overflow of water the Thames at its worst was not more turbid than that stream. No donbt it was equally so with respect to Westmoreland and Cumberland. With respect to some of the schemes alluded to by the commission, he should not like to feel that there was no other source of supply than what had to be brought 240 miles by gravitation. The conclusions the commission had come to on that point were as sound as they could possibly be. He cordially endorsed the opinion that they ought not to obtain their supply from a far distance, and hoped the subject would receive a complete discussion at the hands of the board.

The Chairman, referring to the statement made by Mr. Shaw, that if the population were doubled, having regard to the present supply, 100 million gallons would be sufficient, said the calculation made by the committee of the House of Commons was on the basis of the inhabitants supplied by the water companies. Doubling that, on applying the rule they arrived at the 100 million gallons. Now that calculation was on the assumption that any legislation with regard to the subject should be based on the principle that every inhabitant should have a full supply of water, and then, if you doubled the population, 30 gallons per head would give 180 million gallons per diem.

Mr. Dresser Rogers regarded the question of the water supply as the most important subject connected with the metropolis which could at present engage their attention. It ought to be looked at not only with regard to those who could afford to pay for an adequate supply, but more particularly with regard to the poor, who could not afford to pay for the water which they ought to have. The chief sanitary question of London was how to prevent those dreadful epidemics which broke out suddenly in their midst, and which were mainly caused by a lamentable want of pure water. He did not blame those who lived in courts and alley sfor being dirty, or for not washing their children's faces. A tale one went the round of his locality that a woman was heard to say, "Wash my child's face! Not if I know it. I washed it once, and the poor babe caught such a cold that I don't do it again." He could quite understand that, in many instances, from sheer want of proper water, parents did not properly cleanse theeir children, and so diseases were caused. He believed this was the case in some parts of the east of London, and sometimes in the south also. What, too, was the state of affairs with regard to the cleansing of their clothing? In many of the courts and alleys on the Surrey side the supply did not, generally speaking, continue for a sufficient length of time to enable the people to ohtain a proper quantity, even for other purposes, and consequently they were obliged to let their linen go uncleansed. Next to the cleansing of the body, the cleansing of the clothes was necessary for the preservation of health, and therefore a more abundant supply was urgently needed. The two points for the board to consider were—first, was a constant supply required for the metropolis? and, secondly, if it was required, who should give it? The Royal Commission clearly stated that a constant supply could not be effectually introduced in London so long as the supply remained in the hands of private companies. What, then, was the good of such an amendment as that proposed by Mr. Shaw? Had they not in the report the evidence of men from all the companies? The commission had full powers to examine and to obtain information, and every one, therefore, who gave evidence before them was particularly careful to state the real facts of the case. The inquiry was a most elaborate one, and the report and maps afforded an amount of information which only those who paid great attention to the subject could rightly appreciate. After all this trouble had been taken, what ought the Metropolitan Board to do? Not to wait a day, or even a moment, before showing the public that they were alive to the importance of the question. They were the only body in the metropolis who ought to take the matter in hand, and unquestionably the House of Commons expected them to do so. He could not see the force of what had been said with regard to the enormous expenditure that would be required. It was not like buying land and waiting for the rents. They would have a return for their capital immediately, and if the House of Commons laid down proper regulations and a fair per centage to be paid to the companies for the amount of capital invested, he did not think those companies would at all object to receive any proper consolidated stock in return. No doubt at the present moment, and, in fact, from 1851, the supply to the metropolis was very good; but that was not what they had to consider. The question was, should they give the best water they could possibly obtain at the lowest possible cost? Should they allow large towns in the provinces, such as Glasgow and Manchester, to be considerably before London in the supply of water and the smallness of the cost to the inhabitants? Certainly no time ought to be allowed to elapse before resolutely facing the question. Of course, the rates alluded to in the report could not be carried out by any public companies; there must be an amalgamation of the whole supply, in the hands of a municipal body. It was not right to say, because the amount required would be so large, that therefore the work ought not to be done. The logical way of regarding it was, could the water supply of the metropolis be improved? It was really shirking the question altogether to pretend that the board was not a competent body to deal with it. He did not intend to laud the board, but, taking it as a whole, it did represent the three millions of souls in the metropolis. For all social purposes, and particularly for all sanitary purposes, it was the representative body of the metropolis, and therefore no excuse could be offered for neglecting the question of the water supply. He hoped and believed the board would take the matter in hand, as the commission had pointed to them distinctly as the body to do so. They ought to go to the Home Secretary, and ask if it was the intention of the Government to bring a bill into Parliament dealing with the question. If it was not, then would be the time to consider whether or not the board should do so themselves. They had no power or authority to confer with the companies. The only answer they would get by any application to the companies would be, "We have done all we possibly can do; the supply is very fair; we

cannot give you a constant supply because of the loss." The present was not the proper time to enter upon that question, but it had been proved by the evidence given with regard to country towns that a constant supply did not inflict a loss upon the companies. Many such objections were raised simply as bugbears to prevent their attempting to carry out a more complete scheme, for there could not be any doubt that in reality there was a saving to the companies by a constant supply. If houses were supplied by meter, a considerably smaller quantity than at present would be wasted. In many manufactories in London—soda water and ginger beer manufactories, dyers, &c.—not more than one-eighth, in proportion to the cost in private houses, was paid by the consumer, because no more was taken than was actually needed. Why should not all persons pay according to the quantity consumed, which might truthfully be ascertained by meter? Many large establishments had meters, and every half pint was charged for.

Mr. SHAW: The water for roads is by meter.

Mr. DRESSER ROGERS: The system might be extended to all private houses, and then the charges would be much fairer. Still the chief question was with regard to the supply for the poor. The evidence of Sir J. Heron showed that Manchester had been the chief mover in effecting improvements, and while he regretted that the metropolis had not taken the initiative, he thought such examples should be followed by the board. He hoped that, now a start had been made, the ball would be kept rolling, so that the Government might be convinced that the board accepted the position, while the public would acknowledge that they were doing their duty, and the ratepayers would sympathize with their endeavours. He therefore cordially supported the original motion.

Mr. RICHARDSON said before the board pledged itself to any specific course of action, some attention should be paid to the financial view of the question. The matter resolved itself into a simple question of rating. It was true this was a very large question to take into consideration, but still there were certain facts before them which should enable them to get a bird's-eye view of it, sufficient to make them feel that the committee of the board ought to devote very great attention to a further inquiry into the pounds, shillings, and pence part of the question, before binding themselves closely to the whole of the recommendations of the commission. The capital of the water companies of the metropolis in 1866, when the last returns were made out, was £6,787,599, while the money borrowed on mortgage, &c., amounted to £1,981,915, so that the total capital of all the companies was £8,769,514, and the gross receipts for the year 1866 were £1,044,281. Then the expenditure, after eliminating that portion which was for interest, dividends, mortgages repaid, and so on, amounted to £490,774, leaving a profit upon their undertaking of £553,507. If the board were to undertake to purchase these companies, it was fair to suppose it would be at the rate of 6 per cent., which, upon their capital, would be £526,000; so, after paying them their 6 per cent. interest, only £27,000 remained over. It was also to be remembered that a very considerable portion of that income was unquestionably derived from property outside the area of the metropolis, and that would also have to be eliminated in order to get at the truth, because, as he supposed, any legislation on the subject would be limited to the metropolitan area. Then considerable expense would have to be incurred in opening out the new valleys for the purpose of increasing the quantity of water, and making it of that pure and wholesome kind which was so necessary. It was scarcely possible to realize at the present moment what increase of capital would be required, but the amount must be very considerable. He merely put the matter generally before them, in order to show how necessary it was to devote special attention to the financial part of the business before going too far. They ought to endeavour to find out what really would be the engineering cost of the additional works, and what the prospect of revenue to be obtained from it. Another point for them to take into consideration was, that when the affair was in the hands of a municipal body, the quantity of water used upon roads would be much larger than at present, and of course an increase of revenue would be derivable from that source. He therefore thought the board must go a great deal further than at present, before pledging themselves to any specific course. With regard to the proposed rating, he supposed the board adopted the views expressed in the report. There would then be two kinds of rating—one, the special or domestic rate; and the other, the public or general rate. The latter would represent the money now being expended by the parishes upon their respective roads, and for general purposes; the former would simply be a rate on each house, according to the quantity consumed. For the general rate, everything rateable was to be assessed. On the outskirts of the metropolis there was a very large quantity of land which has never yet been assessed to the water-rate, but the proposal now was to assess that land. On the whole, he was of opinion that while the special rate would be less than the present expense, the general rate would be in excess of what was paid to the companies. He could not have any hesitation in coming to the conclusion, that it was the most desirable thing in the world to have a constant supply, and that it would be necessary to place the management in the hands of a municipal body representing the whole metropolis. If the power were placed in any other hands than those of a municipal body, complaints would be continual on the part of the ratepayers. In page 161 of Sir J. Heron's evidence, the details of the several powers which the Corporation of Manchester possessed for the purpose of preventing waste were given. They had power to enter houses at all times, and to examine the works. The public would never endure that such powers should belong to a trading company. He thought there was not one of the recommendations of the committee to which they could not give their ready assent, reserving to themselves, of course, all questions of finance and revenue.

Mr. ROCHE moved the adjournment of the debate till the 7th of January, at two o'clock; and, in doing so, gave notice that it was his intention to move the following amendments:—"That this board does not concur in the conclusion arrived at by the Royal Commission on Water Supply—namely, that a constant service system cannot be effectually carried out in London, so long as the supply remains in the hands of private companies. That this board concurs in the general policy enunciated in the report of the select committee on the East London Water Bills (1867), that every metropolitan water company shall be compelled to afford a constant supply of water within the metropolitan area, so that it may be drawn direct from the pipes at all times during the twenty-four hours; and that this board should be entrusted with adequate powers of compelling the companies to fulfil these obligations. That the following general principles, enunciated in the following paragraphs of the report of the said select committee, meet with the general approval of the board:—Paragraphs 69, 70, 88, 90, 91, 100, 105, 108, 112."

The debate was accordingly adjourned till Friday, the 7th of January, at two o'clock.

FRIDAY, JAN. 7, 1870.

Mr. ROCHE said the forms of debate would of course compel him to address himself to the motion and amendment at present before the board, and he could only shadow forth certain amendments which it might be his duty to move hereafter. They would all agree on one point—viz., that this was one of the most important questions the board had ever had to consider, and he hoped they would continue to debate and discuss it without indulging for one moment in any personalities of any sort or kind. The case was presented to them at the present time mainly in consequence of the report of the Royal Commission, which would shortly be laid before Parliament. That Royal Commission was appointed for the purpose of considering some very ambitious schemes of some very ambitious engineers. It was broadly asserted by a number of engineers and others, that the metropolis was supplied with water of a very bad quality and in deficient quantity, and they seemed to have come to the conclusion that it was necessary to lay under tribute the lakes of Cumberland and the mountains of Wales in order to supply water to London. Those schemes, brought under the attention of the Royal Commission, were founded upon what was called the gravitation, as distinct from what he would call the river principle. It was contended that river water was most improper water for the inhabitants of towns to drink, and that for that purpose rainfall should be collected in certain districts and brought down by gravitation, and by that means London should be supplied with water. The Royal Commission considered that question, and took a large amount of evidence. They bestowed upon it very considerable care and great attention. They called before them a number of experienced witnesses, and what was the result? They came to the conclusion that those schemes were wholly and totally unnecessary, and that so far from the quality of the water supplied to the metropolis being bad, it was a perfectly good and wholesome water. So far as regarded the quantity of water, they said that the present companies were prepared to supply double the quantity if it was required. Therefore, on both those broad questions of quality and quantity, the Royal Commission arrived at the conclusion that London was well supplied with good wholesome water, and of a sufficient quantity. They seemed to have ransacked the vocabulary of the English language for words to express their high opinion of the water, calling it "clear," "bright," "colourless," "agreeable," "palatable," "good," and "wholesome." As the report of the Royal Commission in that respect seemed to agree entirely with the report of the committee of the House of Commons in 1867, they might fairly come to the conclusion that the water was good, and that there was an abundant supply. The committee of the House of Commons which inquired into the East London Water Bill were directed to inquire into the operation of the Act of 1852, under which the metropolis was supplied with water. They came to the conclusion that, so far as the companies were concerned, they had acted fairly and properly with the water of the metropolis, and reported that the companies had spent a large amount of money in giving effect to the provisions of the Act of 1852. The amount of money expended in enlarging the works of the different companies and in distributing the water throughout the metropolis, since 1852 to the present time, was something like £4,000,000. The Royal Commissioners expressed their opinion of the way in which the present companies had met the demand in the following language:—"The companies have met the demand liberally, and all the upper and middle classes may be said to be at present so plentifully supplied with water that further augmentation would be only waste. In regard to the lower classes, there is no doubt much sanitary improvement still to be effected, and much more useful application of water still to be promoted, but it is probable that the improvement will have a tendency rather to check the waste than to increase the supply." It was no doubt the fact that, so far as the middle and upper classes were concerned, there was an abundant supply of water, and that there were no complaints from those classes of any inefficient supply. With respect to the class of property occupied by what might be called the under middle classes, if there was an inefficient supply to any of those properties, to whom were they indebted for that, and who was the responsible body for such deficiency? He was bound to say that, if it was so, the responsibility rested, not upon the companies, but upon the vestries and district boards of the metropolis. The vestries and district boards had the most ample power, under the amended Local Management Act of 1862, to compel the owners of property to supply to the inhabitants of the respective houses all the water they required at 3d. per week. What had the various vestries and district boards done in pursuance of those powers? He could speak as to his own parish—the parish of Paddington—and made the statement on the authority of the medical officer of health, that he was not aware of one single house in the parish of Paddington but what was efficiently supplied with water. The Sanitary Committee there adopted a plan of what was called house to house inspection. The moment there was a deficiency in any supply, notice was given to the parties to remedy the defect. If the defect was not remedied, the vestry itself did the work, and charged the expense on the owner, who was compelled to pay. It must not be said that that parish had none of the working classes. They had streets upon streets with five or six different families in each house, and he believed in those streets there was a thoroughly efficient supply, so far as it could be maintained on the intermittent system. The only objection made was that the receptacles were not large enough to receive a supply sufficient to last from Saturday to Monday; and that objection was common to other localities. However, application was made to the water companies, and they immediately consented to turn it on either early on Sunday morning or late on Saturday night, and the effect of that was that there was now an efficient supply of water from Monday to Monday, and they had no complaint whatever with reference to the supply. If the other vestries and district boards would not exercise the powers the Legislature had given them, it was scarcely fair to say that any deficiency of supply was to be attributed to the present mode by which the metropolis was served. No doubt in many instances owners of a small class of property did try to evade to some extent their duty as owners, but the public body of the district had power to compel them to carry into effect the provisions of the Act. One of the main things to be considered in discussing this question was the present cost to the metropolis of the water supply. It appeared from the returns before the committee of the House of Commons in 1867 that the amount received in 1866 by the companies as water-rent amounted to some £799,000; no doubt that had increased since 1866. Of course, there was a certain amount of water sold by meter for trade purposes and public buildings, and that amounted to something like £112,500. Then they could obtain no accurate information as to the water supplied to the outlying districts outside the metropolitan area, but it might be fairly estimated at £50,000. Those items together made £162,500, which, deducted from the £799,000, left a sum of £636,500 at present paid by the occupiers of property in this metropolis for water. The rateable value of the property in 1867, according to the returns laid before them by Mr. Pollard, was £16,000,000, and supposing the £636,500 had to be raised by an average rate over the whole of the metropolis, it would amount to a rate of 9½d. in the pound. Of course, some houses paid 7½d., some 9½d., and some as much as 1s., but the average rate was 9½d. He ventured to say that they could not produce to him any single town in England that was provided with water by a corporation at a less rate than was at present paid by the inhabitants of the metropolis. In Liverpool there was a general rate of 6d., and what was called a domestic rate of 6½d.; so that the occupier of domestic property paid 1s. 0½d. In Manchester there was a general rate of 3d., and a domestic rate of 9d., making together 1s. In Glasgow every occupier of domestic property paid 1s. 1d., and they could not show him a single town where the amount extracted from the pockets of the ratepayers for the supply of water——

Mr. LE BRETON: I pay more.

Mr. ROCHE had no doubt the honourable member, living on the heights of Hampstead, did pay more; but what he said was, they could not show him any single town where, on the average, a less amount was extracted from the pockets of the ratepayers for the supply of water than in London. In these cases they must deal with averages. As a matter of course, the companies charged more at Hampstead, where they had to pump it to an enormous elevation. There was one difficulty with reference to the present supply of water, and that was as to the mode of distributing it—what they called the want of constant supply. For all purposes of their present argument, the committee of the House of Commons having expressed an opinion that a constant supply was desirable, and the Royal Commission having expressed a similar opinion, they, as a public board, notwithstanding that it was a question

open to very great argument, were justified in coming to the conclusion that a constant supply would be desirable. The main question to consider was the best and most economical mode of obtaining a constant supply. The honourable gentleman who moved the adoption of the report propounded the scheme as being more economical, and therefore in the interests of the ratepayers of the metropolis.

Mr. FREEMAN: How is it I pay 1s. 1d.?

Mr. ROCHE said it depended, very likely, upon the number of water-closets in the house. His statement was, the charge at present varied from 7½d. up to 1s.; it might go to 1s. 1d. in some cases, but the average amount extracted from the pockets of the ratepayers was only 9½d.

Mr. FREEMAN: The parishes pay something.

Mr. ROCHE said the parish rate was included in it. The parishes at present paid for the watering of their own streets, and what they paid was part of the £790,000, which represented the total amount received by the companies from all sources. It included all that the parishes paid for watering their streets, and he was therefore quite justified in saying that it represented the total amount extracted from the ratepayers of the metropolis in the shape of water-rates, and that average was 9½d. What was the scheme propounded by the Royal Commissioners, which they were asked to adopt? If he understood it at all, it was that they were to purchase up the companies, to carry on the business of a water company, to levy a public rate of 3d. on all property in the metropolis, and then to levy another rate, called the "domestic rate," upon all property occupied for domestic purposes. How was that scheme to be worked out?

The CHAIRMAN: Where did the commissioners recommend a 3d. rate?

Mr. ROCHE said he was coming to that point directly. The purchase of the companies would cost £10,000,000. The annual expenditure would be this: Interest at 4 per cent. on £10,000,000, £400,000; repayment of one-sixtieth part of the capital each year, £166,000; annual expenditure, £388,000; making together an expenditure of £954,000. From that was to be deducted the amount the board would receive for supplies for trading and other purposes, and that he put at £125,000, which exceeded the estimate given before the committee. Then they would receive from the area outside the metropolis a sum, as he estimated, of £50,000 more; making together £175,000; and if they deducted that amount from the £954,000, they would have a net expenditure of £779,000. That was proposed to be liquidated in the following way:—A public rate of 3d. on £18,000,000 of property at present assessable would produce £222,500. It would require a domestic rate of a shilling in the pound on £12,000,000 of property to produce £555,000, making the £772,500. Now he would go into detail as to each of those figures. There was very little doubt whatever that the purchase of the companies would cost £10,000,000. He had taken that very carefully from the evidence of Mr. Bateman and the other engineers, and taking the usual number of years purchase adopted in similar cases, the amount he had mentioned would be required. He thought nobody would be inclined to dispute that statement. It was calculated that if the board were to go into the market to raise that sum of money from time to time they would not be likely to get it under 4 per cent., and that of course would compel them to pay £400,000 a year. Then he apprehended they must of necessity be prepared, if they borrowed money, to provide a sinking-fund to pay it off; and supposing they got the most favourable clause—namely, sixty years, they would have to pay at the rate of £166,000 a year in part payment of this debt. They must bear in mind that it was the repayment of the capital which immediately became an additional charge upon the whole of the metropolis. So long as the companies carried on their business upon their own capital, the ratepayers had nothing to do with any repayment. It was a debt among themselves, and might go on for ages, as far as anybody else was concerned. But the moment they bought them up, as a public body they were bound to look to the liquidation of the principal; and the mere fact of buying them up, immediately compelled them to raise throughout the metropolis an additional sum of £166,000 from the ratepayers at large. The various engineers, in their schemes before the Royal Commission, seemed entirely to have lost sight of the fact that if a public board borrowed it must repay; and in none of their schemes did he find any provision for repayment of capital. The annual expenditure he had reckoned at £388,000. That might appear a very large sum, but they must consider, with reference to the water-works of London, that a vast amount of machinery was requisite and necessary to be called into action for the purpose of supplying London. It was not a mere gravitation scheme, where the water could flow down and force itself by natural laws to the height at which it was wanted; but the water must be pumped, in order to obtain the elevation they required, and the amount of pumping was so large that it led to an enormous expense. They had before them a return by which it appeared that in 1866 the annual expenditure of the whole of the companies for the purpose of preparing and maintaining the works, collecting their revenue, directors and auditors fees, officers salaries, collectors commission, office charges and wages, with all their current expenditure, came to the enormous sum of £329,000; and that seemed, so far as he could ascertain, to be about the average proportion that expenditure bore to the receipts in other places. Now that was not likely, so far as he knew, to decrease, with this exception: It might be said that by amalgamation they would get rid of various directors fees, and a certain number of officers, and would have a certain saving by concentrating it all in one hand. He had allowed a sum of £41,000 for the directors fees and other expenses which might be saved by consolidation, and if any gentleman would go carefully through the returns which appeared in the appendix to the report of 1867, he would find that that was an extremely liberal allowance, and that they could not under any circumstance reckon the annual current expenditure for the absolute purpose of maintaining the works as they at present stood at less than £288,000. But they had to go still further in their experiment. It appeared that there were what might be called works of extension and improvement, and in the year 1866 those works of extension and improvement throughout all the companies amounted to the sum of £161,000 in one year, and the returns for the two previous years showed a very considerable average expenditure over £100,000. Now if that board were to take up the question upon the constant supply principle, they knew that there must be an enormous increase of pumping power, and that the dimensions of the mains must be considerably enlarged. They knew that there must be very great alterations effected throughout the length and breadth of London, and it might possibly happen that they would be compelled to do as had been done at Brighton—lay a complete set of new mains, whereby the houses might be supplied either on the intermittent or the constant principle. The company at Brighton were forced into that because they found it utterly impossible to compel the old ratepayers to take the supply on the constant principle, and had at present two sets of mains. That being so, he had allowed a very moderate annual cost. As London extended there must be additional expenses incurred, and he considered there would be an annual increased expenditure for works of extension and improvement of £100,000. That made the sum £388,000, making the total annual expenditure which they would have to incur by taking the responsibility of these works £954,000. The amount deducted for trade purposes was fair, and calculated with great accuracy, because they knew from the returns the quantity of water supplied for trade purposes. He had gone rather above the amount in setting it at £125,000. The only figures he was compelled to make an estimate of, without having that accurate information which was desired, was the sum he had allowed for their receiving for the supply of water outside the metropolis. The water companies supplied an area far more extensive than the metropolitan area; it extended to Thames Ditton, Kingston, Teddington, Richmond, Mortlake, Twickenham, Brentford, Hendon, Hornsey, and parts of West Ham, and down as far as Mitcham, in Surrey. Of course they must reckon on receiving a certain amount from those districts. They would get a constant supply, and would take very good care to get that constant supply at the expense of the metropolis, because they could not impose the public rate upon them; they must limit the public rate to the extent of their jurisdiction. Without pledging himself to an exact and accurate estimate, he placed those receipts at £50,000. That would make the reduced expenditure £779,000. It had been asked, where did he find that there was to be a 3d. rate in the metropolis—in what part of the report? He found very distinctly that they were to adopt the principle of a public rate and a domestic rate, and he found it stated very clearly, and brought prominently into notice, that a 3d. rate was the one that had been found to answer exceedingly well in Manchester. He had a fair right to assume that, if this scheme came into operation, a rate of some sort or kind was to be established over the whole metropolis, whether 1d., 2d., or 3d.

The CHAIRMAN: Your statement was that the commissioners recommended a 3d. rate. That is why I asked the question.

Mr. ROCHE said his statement was that the commissioners recommended the principle of a public rate and a domestic rate, and they brought prominently forward the question of a 3d. rate as doing its work very well at Manchester. He had a fair right to assume that some rate was to be levied over the metropolis. At all events, the lower the public rate the higher would be the domestic. If there was no public rate at all, the domestic rate, instead of being 1s., would be 1s. 6d. If they adopted the scheme, their policy must be to get the largest amount of rate possible upon the rateable property in the metropolis of £18,000,000, and to decrease as much as possible that which was to be assessed upon the occupiers of domestic property, who represented £12,000,000. It might be asked how he arrived at the fact that £12,000,000 represented the annual value of the domestic property in the metropolis. He had taken it from the evidence of two or three of the engineers who had estimated it, and it seemed to him to be a very large estimate indeed. In Manchester the domestic property did not come up to one-half of the whole rateable value of the property, but he had taken it as representing two-thirds. Of course, if the annual value of the domestic property was only £9,000,000 instead of £12,000,000, the rate would be so much larger. He had taken the highest figures, in order to avoid any under-estimate. No doubt they would be met with this difficulty: How were the board to levy a domestic rate? They could levy the general rate, because they might ask the vestries to send a given sum of money, calculated at 3d. in the pound upon the whole value of their districts; but how were the board going to assess a domestic rate? He did not know. Were they to apply to the district boards for a return of all the domestic property in their jurisdiction, and were they going to make their rates direct, and to collect them direct, or in what way would they do it? Of course in a small place like Manchester they could do it. In Marylebone, which was quite equal to Manchester, they would have no difficulty in collecting the rate within their own boundaries, but he did not think they could carry such a system into effect as that the collectors of the board should collect a water-rate throughout the length and breadth of London. In what way were they to collect a district-rate, which must vary from time to time according to district boards, he was somewhat at a loss to know. It seemed to him the inevitable result of adopting this scheme that they must have a general rate, and, presuming that to be 3d., the sum required for a domestic rate, would be 1s., and every occupier of domestic property in the metropolis would then be called upon to pay 1s. 3d., whereas many of them at the present time only paid 7½d., others 9½d., and up to 1s. 1d. He wished to call Mr. Rogers's attention to this, because he professed to believe that they were going to save a large amount of money; he had been taught that they would be able, as in gas companies, to make a profit and relieve the ratepayers; but instead of making a profit and relieving the ratepayers they would cast upon the ratepayers of the metropolis an additional rate of 3d. in the pound. What were they to get for this additional rate? They were to get a constant supply. But was there no other mode of getting a constant supply, except the infliction of a 3d. rate? Now if that question was to be put to them, that they must either pay that or be content with what they had got, he could very well understand many of them might be of opinion that they would rather pay the additional 3d., and have a constant supply, than go on with the present system. But they found it stated that the companies themselves were perfectly willing to give a constant supply. In 1867 a question was sent round to them, asking what effect they had given to the Act of 1862, and the purport of the reply of all the companies was this: "Give us the power of protecting ourselves against waste, and we are ready to give a constant supply." Now, if the companies were willing to give that constant supply, not at any increased cost, but at the present cost—if they were willing to give that upon receiving that protection, why should they not receive that protection? The committee of the House of Commons in 1867 recommended that they should receive that protection, and that the Board of Works should have statutory powers, in conjunction with the companies, to compel the companies to give a constant supply, and, on the other hand, to protect the companies from the waste that must result. What was the argument brought against that? It was stated by the commissioners, in their report, that Parliament would never grant to any private company the necessary powers of inspection for that purpose. What foundation was there for that statement? Not only was it without foundation, but it was contrary to the evidence brought before the Royal Commission. In the appendix to that report, page 99, was a return sent in by Mr. Simpson of thirteen different towns supplied upon the constant principle, and he found that of those towns only four were supplied by corporations, and nine by private companies. If they would refer to the evidence given before the committee of 1867, they would find that clauses were laid before that committee, that had been inserted in the Newcastle and other Acts of Parliament, giving the companies the power they required to make regulations. They had power to decide as to the size of the pipes, power to inspect, and everything that could be desired; and it was given in evidence, by one of the engineers, that the ratepayers made no objection to those powers. If Parliament had already granted to nine private companies, in different towns, the powers necessary for the purpose of their protection, on what principle was it to be said that Parliament would deny the same powers to the companies in London, more especially when those powers were not to be exercised by the companies only, but in conjunction with that board?

Mr. BEVAN: I think the East London have powers.

Mr. ROCHE said they had very extensive powers, but not powers equal to the companies he mentioned. What, then, became of their argument—for this was really the main argument on which their report was founded—that Parliament would never give to private companies sufficient powers to prevent waste? That portion of the report was really without any foundation. The proposition which it would be his duty, when the forms of debate permitted, to ask them to support, was to give effect to the report of the parliamentary committee of 1867 to compel the companies to supply, on the constant principle, such parts of the metropolis as the board might order, and that the board should have full powers of inspecting the premises, so as to protect the ratepayers on the one hand from any unnecessary and inquisitorial inspection, and to protect the companies on the other side from negligence and waste of water. It was said that a 3d. rate was desirable, because there were great public purposes to be answered. What amount of money was at present raised in the metropolis out of the whole water-rates for what might be called public purposes? The only water used for public purposes at present charged on the ratepayers was that used in watering the roads.

An HONOURABLE MEMBER: And flushing the sewers.

Mr. ROCHE said that was a very inconsiderable amount, and was paid for by the vestry boards and by the Metropolitan Board. At Paddington, if they wanted to flush the sewer, they had to pay for the water, and it was quite right they should pay for it; the ratepayers of the district paid for all the water they used for public purposes—watering the roads and flushing the sewers—but there was very little used for flushing sewers. Then the water used at fires was given gratuitously. He had endeavoured to obtain the quantity of water used for the purpose of fires, but had not at present received particulars. The amount of water used for watering the streets was of the annual value of £25,000. In Paddington the quantity was very accurately tested, and the rate did not come to one halfpenny in the course of twelve months. They were now asked to pay 3d. a year for exactly the same thing, with this exception, that all the vestries and district boards would draw upon this water *ad libitum*. They would say, "We are paying a threepenny rate," and, instead of watering with care, they would draw away four times the amount at present used. So long as each district paid its own expenses, so long was it economical; but the moment it drew from a central fund, it indulged in extravagance. That would be a large additional expense. They had a right to look to this. If they were going to adopt the scheme thrown out by the Royal Commissioners, let them see what position they would be in. He apprehended his friend, the member for the City, would be prepared to say that the board would receive from the City the most determined opposition; that the Corporation of London could never allow them to levy a rate of 3d. in the pound, and to interfere with the supply of water within the City. No doubt they would receive the most determined opposition from the City of London, and he thought they would be perfectly justified in so doing. They would receive the most determined opposition, not only of all the water companies, but of all the gas companies in the metropolis, and of a large number of vestries and district boards. Looking round, he did not know where they would find support to enable them to carry through a measure of that kind. If, on the other hand, they adopted the report of the committee of the House of Commons, what then? The Corporation of London would have nothing to say to them. There would be no additional taxation, and they could not consistently oppose it. The water companies could not oppose it upon principle, because they had already expressed their willingness to assent to it. The vestries and district boards would not oppose, because they would be getting a constant supply for the same price they paid for an intermittent supply. Therefore the mode in which he ventured to suggest they should proceed, was one which was not calculated to raise any opposition whatever, while the mode pointed out by the Royal Commission was one that could not be carried through, on account of the determined opposition with which it would be met. Manchester had always been held up as one of the best supplied towns in the kingdom. What was the case there? In 1845 Manchester was unfortunate in this respect, that the water was of the very worst quality and most limited in quantity. That was not the case in London. The works of the private company at that time were totally inefficient for the supply of Manchester; but that was not the case here. Moreover, the Manchester Company were not able to acquire money for the purpose of carrying out any extended works, and it was because there was no private company ready and willing to come forward on the mercantile principle to supply Manchester with water, that Manchester was, from absolute necessity, compelled to make it a municipal affair. It was no choice—it was an absolute necessity. If it became a necessity in London, if they had been told by the Royal Commission that their water was bad and deficient in quantity, and the companies could not supply it, but that they must have some grand scheme, they would havedone what Manchester did—go to an expense, however enormous, for the purpose of supplying water. Manchester commenced in the year 1845; they had now been in operation something like 25 years, and the result of corporate management there was that they had not yet completed their scheme, though they had had something like £2,000,000 for that purpose. But Manchester was always held up as the great model, and a gentleman (Sir Joseph Heron), who spoke in a very positive manner upon all questions connected with the supply of water to the town, was asked, "Have you no fear at all of any deficiency in your supply at Manchester, or for the district that you supply in addition to it?" Well, that gentleman stated most positively, "Certainly not;" and that evidence appeared to have been given on the 2nd of April, 1868. Most unfortunately for that gentleman, on the 4th of August, 1868, he was under the necessity of sending this notice to the ratepayers of Manchester: "I am directed by the Water-Works Committee to inform you that, in consequence of the unprecedented drought, the supply of water to your works will be diminished toone-half. I send you this communication in order that your business arrangements may be as little interfered with as possible;" and if any gentleman had been fortunate enough to be at the Queen's Hotel at that time, and was desirous of a bath, he would have seen the notice: "Owing to the scarcity of water, visitors are respectfully requested not to waste any. A sponge bath is 1s.; all other baths are discontinued." So within three months after this gentleman had given his evidence, in the most positive way, that the supply of Manchester was of such a character that there was no probability of any deficiency whatever, within the short space of three months he could not get a bath in Manchester. But it did not end there. Another notice subsequently came forward that the street-watering was stopped. What would the ratepayers of London have said to the water companies if, in August, 1868, there had not been a supply of water for the streets?

Mr. RUNTZ: There was not; there was a similar notice.

Mr. ROCHE: We had a sufficient supply for streets, and we did water our streets.

Mr. HEALY: So we did in St. Pancras, too.

Mr. ROCHE said he did not know what was done in Hackney, but there was sufficient elsewhere. This arose from the gravitation principle being adopted by the Corporation of Manchester in preference to what he called the river principle.

Mr. TURNER: What rivers have they at Manchester?

Mr. ROCHE said he thought they would find there was a river there; but, of course, the cause of it was perfectly clear—that the corporation, presuming they were compelled to take water upon the gravitation principle, had not calculated the extent to which a drought might take them, and the result was that there was that inconvenience. Then with reference to the amount, the charge there was a 3d. public rate for the whole of the property in the municipal boundary, and there was a domestic rate of 9d.; but how was it they were enabled to do with this low rate? The same gentleman stated that in his evidence as clearly as possible. He said the corporation supplied a large district beyond the limits of the city, and it was by reason of the income that they derived from the supply beyond the city, and the income that they derived from trade purposes, that they were enabled to make their domestic rate so low as 9d. Their total expenditure was £120,000, and out of that total expenditure they received for trade purposes inside and outside the city £69,000 a year; and if it was not for the trade purposes for which they were enabled to supply water, their rate would not be 9d.—it would be 1s. 6d. But they had no trade to supply in London. They knew the extent of water used for trade purposes in London; it bore the proportion of one-sixth instead of four-sixths; and, therefore, they could not possibly expect to succeed in getting so low a rate as Manchester, when the reason of that low rate arose entirely from the moneys they received from a source not open in London. If that were so, there was no possibility of their being enabled to supply the ratepayers of London with water at anything like the price charged in Manchester. That being so, it was for the interest of the board to compel the companies to supply at present cost under the supervision of the board. One main reason given by the Royal Commissioners in support of their proposition was because it was in accordance with an ancient principle. He was not one of those great lovers of antiquity who believed in everything good in the past and everything bad in the present and the future, and certainly if there was any one example which ought to be held up as a beacon and warning, it would be the ancient functions of corporations. They all remembered what those ancient functions were—that people could not have a coat made without being told how much they should pay their tailor; that they were not allowed to drive a pig into the market unless the local authorities told them how to do it; they could not work unless they accepted the wages the corporation of the day permitted them to receive, nor buy bread or sell it without taking their price. If there was any one function of a corporation which ought to be avoided, it was that constant interference with matters in which corporate bodies had no concern whatever. But such was the inefficient management of the corporations of that day, that for the last 300 years London had been dependent for its water entirely upon private and commercial enterprise, and to the companies proceeding upon what might be called the mercantile principle. They were now asked to cast aside entirely the experience of 300 years and to go back to those ignorant times, and to adopt the science of municipal government which was in vogue in the 14th century. He would rather be guided by the light of the present day than by the light of those dark ages. He had stated, as fairly as he could, the two principles on which they should act. No doubt certain appeals would be made to the passions of the members of the board, that certain appeals would be made to their self-love. They would be told to glorify themselves by undertaking this great work—that unless they did it they would show themselves to be totally unfit to be the governing body in the metropolis. He had no doubt they would hear appeals of that sort made, but if gentlemen would exercise that which they had heard so much of—their common sense—and act upon sound reason and sound judgment, casting aside all these appeals to their self-love and self-glorification—and he thought they would do so—they would come to the determination to compel the present companies to give the constant supply under the control of that board and at the present price.

Mr. NEWTON said he listened with great attention to the elaborate and laboured argument of his friend Mr. Roche, but he had never before heard any person occupy so much time in that room to so little purpose, for throughout the whole of the speech there was scarcely a single argument, or a single fact worth calling so, which really supported the side of the question to which Mr. Roche had allied himself. They had been asked not to brave the opposition of a great many distinct bodies in the district, notably the Corporation of London; but it was better at once to clear the question by saying that it was not one between the board and the Corporation of London, or between any two public bodies, and ought to be treated on its own merits alone. He therefore thought the honourable member had simply raised up the fear of an opposition for the sake of frightening them. What they had to do was to consider one report as against the other. Both recognized the principle of a constant supply, but they did not both recognize the fact that in order to obtain an efficient constant supply the distribution of water must be in the hands of some public body. Upon that point there was an issue. Mr. Roche had quoted some figures in opposition to that view, but he had fallen into a complete mistake as to the meaning of those figures. He had tried to persuade them, against their own knowledge and common sense, that at present they were only paying 9½d. in the pound for water; but they all knew that when the collector came round they had to pay more than 9½d., more than 1s., more than 1s. 2d. in the pound. Mr. Roche had come to his conclusion with great ingenuity. He had told them that if a 3d. rate was levied, according to the recommendation of the report—but it turned out to be no recommendation of the report at all—upon £18,000,000 of property, £222,500 would be realized; while a domestic-rate of 1s. on £12,000,000 would produce £550,000. These together would make £772,000, to meet an expenditure of £779,000. That was perfectly fair, but there was a great contrast between these figures and those he used in order to prove that the average payment was 9½d. in the pound. He had said that the report of 1866 was based upon the assessment of £16,000,000 and an expenditure of £635,000. That was equal to 9½d. in the pound. But when he was dealing with the domestic rate of 1s. in the pound, his assessment was merely on £12,000,000, although the assessable property was £18,000,000. The fair way, however, would have been to have put the domestic rate in 1866 on £10,000,000, and then instead of 9½d. he would have had 1s. 3½d. in the pound. It was easy enough to manipulate figures to prove anything it was desirable to prove, but their object should be so to deal with them as to obtain a perfect knowledge of all the circumstances of the case. The views of the Royal Commission had not been fairly put before them by the previous speaker. He (Mr. Newton) regarded the report of that commission as the most comprehensive and exact report which had ever been issued upon the water supply question. From the report of the commission presided over by the Duke of Buccleuch in 1843, which report was the basis upon which the Manchester Corporation acted in undertaking the supply of that town down to the present time, no report had contained the evidence of so many eminent men, or been digested with greater care and accuracy. It would be the text-book upon the question in all future considerations of it. It was not for the board to consider whether they were the body to be entrusted with the power; all he argued for was that there ought to be some power in the metropolis which could be entrusted with such matters. If such a power did not already exist, it was the duty of the Legislature to constitute one, because the supply of water to 3 millions of inhabitants never ought to remain in the hands of men who were actuated only by commercial principles. That was the great basis for the consideration of the subject. Was it right to allow the supply of one of the first necessaries of life—an essential of existence—to continue in the hands of persons—honourable men, no doubt—but whose primary consideration was to make money out of the transaction? The supply of water never ought to be governed by the operation of such motives. It ought to be in the hands of men who were charged with the sanitary condition of the district—men whose first duty was to study the health and the comfort of the people, even though such a scheme should incur a somewhat greater expense than the present. Was it possible—was it in the nature of things that boards of directors, entrusted with the control of capital and works for the purpose of getting dividends for the shareholders, should make the public interest and public health their first consideration? That was one strong reason why the supply of water should not be left in mere commercial hands. It might be said that there was no greater reason for the supply of water to be entrusted to a public body than for the supply of bread and other necessaries of life; but if the supply of bread was confined to one source and one scheme of distribution, then bread would be in precisely the same category as water. The supply of water for each district was necessarily confined to one source, and the means of distribution were essentially one, so that people were dependent for their comfort and health upon the will of those whose interests were not identical with their own. This fact deprived the question of any similarity to that of the supply of bread or any other necessary of life. If the sources of the supply of bread were not so multifarious as they are, and if the means of distribution were not always adjusting themselves to the demand, there would also be a call for some interference on the part of the state; while if the sources of the supply of water were as various as those of the supply of bread, we should hear no such arguments as the Royal Commission put forth in their report, to the effect that the supply of water ought to be in the hands of a public body. Mr. Roche said that the fact that the supply of water was formerly in the hands of the municipalities was of no

weight with him, but that view of the question was not without its importance. During the 13th, 14th, and 15th centuries the Lord Mayor and Corporation of London did supply themselves with water, and it was not until the year 1606, when the Act under which the New River supply was obtained was passed, that Parliament handed the control over to a trading company. He attached some importance to these traditions of the past, and thought they had reason to pride themselves in the fact that down to the present time they had maintained in representative local institutions some degree of authority over these matters. Surely London might well follow the example of large provincial towns which had acted upon the plan which formerly was in operation in the metropolis, and had carried out their works satisfactorily. He did not think the example of Manchester was to be disregarded. He had great faith in the people of Manchester, for they were an enterprising people of sound common sense, and no doubt Sir J. Heron would be able to answer Mr. Roche's quotations from his evidence tending to show there was some inconsistency in his remarks. But there were some other observations made by Sir J. Heron embodied in the report, and which were given before the Royal Commission of 1843, proving that his feeling was very strong upon this point. He said: "With a view of ensuring a thorough supply and proper distribution of water to all classes, we recommend that it be made imperative on the local and administrative body charged with the management of the sewerage and drainage to secure a supply of water in sufficient quantities not only for the domestic wants of the inhabitants, but also for cleansing the streets, scouring the sewers and drains, and the extinction of fire. For this purpose we recommend that the said body should have power to contract with companies or other parties, and to make other necessary arrangements. The corporation of that time felt so satisfied that it was desirable to carry out those recommendations in the city of Manchester, that we determined to go to Parliament to take power to purchase the works of the existing company, and to go for a scheme which we believed would be sufficient for our present and prospective works; and we determined also to go beyond those recommendations, because we determined, believing it was only right and just, to introduce the principle of a public rate, and I believe it was the first time an application was ever made to Parliament to obtain power to levy, in addition to a compulsory domestic water-rate, a compulsory public rate, payable upon every description of property within the city. We applied to Parliament in 1845, and in subsequent Acts obtained powers to carry out the scheme which is not yet, I am sorry to say, completed. In 1848 we went for a second Act, simply to enlarge the scheme which was passed by the Act of 1847, and since then we have had to go for other Acts of Parliament to obtain additional power, both with regard to the scheme itself and also to carry out in detail works within the city." Now, Mr. Roche quoted that as if the whole thing had failed, that though the scheme had been in existence since 1845 they had not yet been able to complete it. But the proper inference was that the corporation undertook certain works in 1845, and in 1847 it was necessary to extend those works; from time to time they had asked for more extended powers, and even yet they had not completed, nor would they ever complete, their scheme, so long as new streets and houses were continually springing up adjacent to the borough which they felt it their duty to supply with water. Then he was asked, "You are of opinion, are you not, that the supply of water should be in the hands of municipal authorities?" and he said, "I think the experience we have had in Manchester has shown to us most clearly that the advantages are very great indeed of the supply being in the hands of the corporation." He said further that a private company could not have acquired the money nor the powers from Parliament which they did. If it had asked Parliament it would not have granted the powers, and it is only by the exercise of those powers that we have been enabled to incur such an expenditure, and to supply water at a very low price for the inhabitants of the city. Mr. Simon, the medical officer of health of the Board of Trade, speaking of the great powers which water companies held in regard to the health of the population, said he felt very strongly that the public required more protection than it yet had against the companies occasional malfeasances; and that this power of life and death in commercial hands was something for which, until recently, there had been no precedent in the world, and even yet the public seemed but slightly awake to its importance. He (Mr. Newton) thought that opinion must strike home to the mind and feeling of every one who desired to see the metropolis supplied with one of the essentials of life. They must all be impressed with that evidence, and see that it was neither wise nor proper to leave the supply of water in the hands of commercial interests. Surely they need not trouble themselves about how the change was to be brought about. They were told that within a very short time there must be a reconstitution of the authorities within the metropolis; but what they had to deal with at present was the necessity of having the supply of water to three millions of people controlled by some body which had the consideration of the health and comfort of those people at heart. A very great deal had been said about the recommendations of the report of the committee of 1867, and the honourable member for Paddington had caused them to be circulated, with a view to their consideration. If a comparison were drawn between the report of the Royal Commission and the report of the committee of 1867, it would be seen that the committee of 1867 did not take the question upon the broad basis which the commission did, and that the commission had much more effectually discharged the duties of commissioners than the committee. Of course, this was no discredit to the committee of 1867, because they were merely appointed to consider certain bills before Parliament, notably the East London Water-Works Bill. The public were at that time dreadfully alarmed by statements made by the Registrar-General, Dr. Frankland, and other eminent men, to the effect that we were indebted for cholera in the east of London to the bad supply of water. In so far as this subject was concerned, the committee discharged their duties well, but it was no part of their duty to consider the vast question which the commission undertook to report upon. They had not at hand the evidence which had been taken by the commission, nor had they probably the power of instituting so comprehensive an inquiry; still they came to the conclusion that a constant supply was necessary for the metropolis, and that that constant supply could not be obtained if the matter was left in the hands of the water companies themselves. Their recommendations clearly showed, first of all, that there must be a municipal body connected with the water-works to ensure the true carrying out of an Act of Parliament enforcing a constant supply; and next, that the vast machinery of the board was to be put into operation for the purpose of seeing that the companies performed their duty. He did not know what the expense would be, but if the district surveyors appointed by the board were to be charged with the duty of superintending every house in the metropolis, seeing to the laying on of water, and ascertaining that the fittings were strong enough to withstand the pressure of a constant supply, then the expense would be something enormous. Why should a municipal body be called upon to do this if they had only to call upon the companies, as in other places, to get all that was required? Both the committee of 1867 and the commission of 1868 felt that justice could not be done to the people of the metropolis —that the constant supply would never be obtained for them in a satisfactory way—so long as the supply was left entirely in the hands of the companies, and that there must be a public representative body, having the interests of the ratepayers at heart, to see that the duties were properly performed. In 1820, after the joint-stock companies became possessors of water, and had the distribution in their hands, there arose considerable dissatisfaction in the public mind with respect to the mode of supply, and a committee of the House of Commons was appointed. Additional grievances were complained of, and in 1843 a Royal Commission was apointed, presided over by the Duke of Buccleuch. In 1852 there was the general legislation upon the water companies of London, and the Metropolis Water Supply Act was passed. In 1867 another committee reported on the subject, and in 1868 another Royal Commission was appointed, and yet it was said that the companies performed their duties in a perfectly satisfactory manner. If such had been the case, the Legislature would not have appointed all these committees and commissions to see if something could not be done to enforce from the companies a fair measure of justice. If the board would consider this in connexion with the principle that the supply of water is essential to our comfort and existence, they would see that it was their duty to propound the view that the supply should be in the hands of a municipal body, never mind what body it was to be. He did not say that the board should have the power, but simply that the distribution of water in the metropolis ought to be in the hands of a municipal body of some description or other. If none at present existed competent to perform the duties, it was the duty of the Legislature to create one, whether commission, committee, or representative board, and to see that they were entrusted to those whose first consideration was the comfort and health of the people.

On the motion of Mr. Fowler, the debate was adjourned to Friday, the 14th.

Friday, Jan. 14.

Mr. Fowler said the importance of the subject, as connected with the sanitary condition of the people of the metropolis, was a sufficient reason why, on the occasion of the presentation of the report of the Royal Commission to Parliament, it should be fairly and openly discussed by the members of the Board of Works. It was almost unnecessary for him to allude to the benefits which an abundant supply at all times of pure water would confer upon the inhabitants. If their object was to improve the condition of the poor of London, they could not do so more effectually than by giving them the opportunity of cultivating cleanliness. This would raise the tone of the working classes, and go a great way towards getting rid of the large pauper population, whose existence they had so much to deplore, and towards decreasing the large amount which householders had to pay in the shape of poor-rates. For many years Parliament had been considering the question of the water supply of London. The people go on slumbering from year to year, and then Providence visits the metropolis with some fearful epidemic; a great number of deaths occur, the public mind is aroused, reports are made that the water is insufficient, and then Parliament takes action and makes an inquiry, and active legislation ensues. Nothing more is done till another epidemic comes, and then the previous proceedings are again taken, and so the course of things goes on. Looking at what had taken place in the past, no one could say the water supply of London was in a satisfactory condition. Hence arose the necessity for the frequent inquiries which Parliament had from time to time made. But the evil must be very serious to cause the Legislature, within so short a period, to pursue two inquiries upon it; the result of one being the report of the select committee of 1867, and that of the other the report which they were more especially considering—that of the Royal Commission of 1868. The last time cholera visited London the amount of mortality, especially in the east end of London, was very great; and, whether it was the fact or not that that fearful mortality could be traced to the water supplied to that part of London—probably a number of causes all contributed to the same effect—the public mind was so aroused, that at last it seemed necessary that some active steps should be taken, and therefore Her Majesty issued the Royal Commission, whose report they were now considering. In the minds of some ambitious engineers, who were interested in the matter, these complaints had suggested that there must be something radically wrong in the system of supply, that the sources of the supply must be insufficient, and that the water itself must be unwholesome. Hence different schemes for remedying the evil had been proposed, and the Royal Commission had examined into their advisability, more especially the scheme proposed by Mr. Bateman for bringing the water all the way from Wales—183 miles—at a cost of £11,000,000, and that advanced by Mr. Hassard for laying under tribute the lakes of Cumberland and Westmoreland, and bringing the water 270 miles at a cost of £14,000,000. The other schemes examined were mostly supplemental to these. The Royal Commission probed the matter to the very utmost, had before them all the most eminent men of the day, and all who were worthy of consideration, and then drew up a clear and most admirable report. That report settled the question as to the sufficiency of the supply which can be furnished to the metropolis. It would no longer be necessary to consider any new schemes for supplying London. It had been proved beyond all doubt that the river supply from the Thames and Lea, under proper conditions, is quiet sufficient, not only for the present wants of the inhabitants, but for the prospective population for many years to come. That point being then quite set at rest, what it was most important for them to consider was the question of the constant supply. In the year 1852 Parliament turned its attention to this matter, and enacted that upon the requisition of four-fifths of the owners or occupiers of property, the companies should be obliged to give a constant supply unless it could be shown that one-fifth of the number had not proper apparatus. The result, however, had been that in no instance had a company been called upon, from the very fact that it would be perfectly impossible for any one in any district to get four-fifths of the inhabitants to agree to the requisition, just as it would be impossible to prove that one-fifth of the inhabitants had their apparatus in such a state that a constant supply could not be maintained. Therefore, although Parliament at the time did what it could, the practical result had been that the constant supply had never been granted, and never been applied for, so that the Act had remained a dead letter on the Statute-book ever since. In 1867, Dr. Rendall submitted a report to the vestry of St. Saviour's, Southwark, upon the state of the houses, as regards the supply of water. He said that inspections made within that year had shown that in numbers of cases the poor had no receptacles, properly so called, for water at all; in others they had, as makeshifts, tubs, jars, barrels, &c., which were wholly unsuited to the purpose. Moreover, even where these were, they were kept in overcrowded rooms or in extremely filthy yards. In many places the receptacles were more or less rotten and tainted, and were mostly without covers, notwithstanding that they were almost necessarily put in situations where they were exposed to offensive emanations or to smoke. They were usually placed near open drains, water-closets, sinks, &c. The full force of this statement would be more thoroughly understood when it was remembered how largely water absorbs deleterious and other gases. Such was Dr. Rendall's opinion of a very densely populated district on the south side of the Thames; and, notwithstanding the statements made by the member for Paddington, to the effect that the water supply was in a satisfactory condition, it was only necessary to send out letters to the district boards and to the medical officers to obtain thorough condemnations of the present system of supply to the metropolis. Other and more important evidence was at hand to the same effect. They had Captain Tyler's reports, and the facts elicited in the evidence before the select committee of 1867 on the supply of the east end of London, by which it was shown that not only was the water insufficient, but that there were vast districts still in London where the supply was absolutely shut off altogether—where the inhabitants did not receive that supply to which they were entitled. The engineers and others connected with the water companies had written most elaborately upon the subject of the constant supply, and one difficulty which they spoke of was, that the waste of water is so great that an attempt to give a constant supply would endanger the general supply of the metropolis. That was a very strong statement, and if really true would put an end to the whole question; but any one who read carefully the evidence given before the Royal Commission would see this fact most clearly established —that so far from the waste being greater under the constant supply system,

that system was really economical, and that more waste occurred when the supply was intermittent than when it was constant. The amount supplied per head per day in London, according to the evidence given before the commission, was 32 gallons, while in the towns of Lancashire and Yorkshire, which are supplied on the constant principle, in no case did the number of gallons per head exceed 20. In most cases it was only 16. This included all the water used for the purposes of trade and for parochial purposes. If these statements were true, and there was no reason to doubt the evidence given before the Royal Commission, there was an end to the objection about the waste, and by the constant system water would positively be economized. If it be true, as Dr. Rendall stated in his letter to the board of St. Saviour's, that the poor in that parish had only five gallons per head per day, in consequence of the receptacles not being sufficiently large, how great must the waste be when it is shown most conclusively that the supply by the companies is equal to 32 gallons per head for each of the 3 million of this metropolis. That appeared most effectually to get rid of the difficulty which had been raised about the waste being too great for a constant supply to be given. The question must also be looked at in its bearing upon fires. Last night a fire broke out in his own district, Stockwell. Engines from Captain Shaw's brigade came up with their customary agility immediately; but when they arrived there they could not get water for fifteen minutes, and consequently the house was destroyed. It was perfectly well known that it was during the first five minutes of a fire that there was the greatest chance of putting it out, and probably, if the constant system had been in use, and the hydrant had been nearly opposite the house, the fire he alluded to would have been put out before it succeeded in doing much damage. That effectual means might be adopted for putting out fires was shown by the experience of other towns. Mr. Stuart reported of Paisley that it was scarcely possible to burn a house. The flow of water was so great and continuous that the floor of an ordinary house could be filled in ten minutes. In nine cases out of ten, if fire-plugs were placed at convenient distances, the fire-engines would be there and at work as soon as required. See, also, what had been done in this respect in the town of Hamburg. In 1842 there was a dreadful fire in that town, which lasted three days, and destroyed upwards of 2000 houses, including all their public buildings. The consequence was they were obliged to rebuild the city. The work was entrusted to a very eminent civil engineer, and in his report that gentleman stated how they profited by the lesson. Throughout the whole length of the pipes, at intervals of 40 yards, were placed fire-plugs, capable of supplying a 3-inch jet, which might be carried inside the house where the fire was. Fires have repeatedly burst out in the part of the town which has been rebuilt, but they have always been put out at once; whereas, if they had had to wait twenty minutes or more for water, great conflagrations might have ensued. A person passing sees the smoke, the alarm is given, the door is forced open, the jet is applied, and so the fire is extinguished immediately. The saving of money alone by the prevention of fires would soon exceed the whole expense of the alteration of arrangement in London. But there was no need to go to the port of Hamburg for evidence as to the advantages and necessity of a constant supply being brought to the houses in London. Captain Shaw himself has given a conclusive opinion upon the subject. Considering the magnitude of the question, the number and variety of private and public interests involved, and the great financial and mechanical difficulties which stand in the way of a change, he says: "I have no option but to state my opinion frankly, that it is advisable to discontinue the existing intermittent system, and to substitute for it a constant service, with a sufficient number of proper pipes which could be opened at once by any one." The public papers, too, afforded proof of what are the evils of the intermittent system. See what had taken place at the Star and Garter, Richmond. There was water accommodation in that house for the large amount of 80,000 gallons. The supply was not constant, and therefore was not on when the fire took place, and the tank was empty, and, though Richmond is nearer the supplies than London, a messenger had to ride five miles before finding a turncock. The consequence was the fire had got so firm a hold of the building by the time the engine could begin to play, that the house was thoroughly destroyed. If anything had been needed to show the necessity for a constant supply beyond the reasons which had already been adduced, and those which are found in the evidence given before the Royal Commission, that great conflagration surely must be sufficient. True, Richmond was beyond the radius, but the event showed a strong reason for a change of system. The advantages of a constant supply might thus be summed up—first, it is less expensive; secondly, the water supplied to the inhabitants is fresher and cooler when taken direct from the pipes than after being allowed to stand in a cistern; thirdly, there would be no necessity for cisterns at all, except perhaps in the case of water-closets; and, fourthly, in case of fire, water can be immediately obtained for the purpose of putting it out. The next point to be considered was that of the cost of the change to owners and occupiers of property. The board had had great experience as to what owners and occupiers of property would do. Look, for instance, at the state of London previous to the constitution of the vestries and district boards, and the Metropolitan Board. At that time there was really no drainage at all except cesspools, but when the drainage system was being carried out, landlords in general willingly put themselves to the expense of forming connexions. The compulsory notices were very few indeed in proportion to the number of persons who drained. The people generally have been only too glad to avail themselves of the opportunity of getting better drainage. No doubt the same thing would take place with regard to the constant supply of water; the owners and occupiers of property would gladly come forward and do what was required if a regular supply of pure water was guaranteed. The engineers of water companies who gave evidence before the Royal Commission said the real difficulty of the constant system was the necessity for having parliamentary powers of the most stringent character in order to prevent waste, and it was a question whether Parliament would give such strong powers to a trading company. He himself thought it very doubtful that Parliament would give the necessary powers to a company to obtain speedy justice in case any inhabitant was found infringing the rules laid down with respect to the degree of care to be taken to avoid waste. There could not be two opinions that if parliamentary powers were required of a very stringent kind, which were to be exercised without fear of consequences in any way, they must be given to some central body which would carry out its object faithfully and carefully. He did not pretend to say to whom the powers should be entrusted, whether to the Board of Works, the City of London Corporation, or a corporation composed partly of the companies representatives and partly of representatives of the inhabitants of the metropolis; but this proposition he wished to lay down most clearly—that it is necessary for a constant supply to be given, and that, in order to secure the improved sanitary condition of the inhabitants, it is necessary that the supply should be in the hands of a public body, and not of private parties. Upon this point the evidence was extremely strong. The constant supply of water to the people has been delegated by Parliament to the municipalities of Manchester, Glasgow, Liverpool, Dublin, Bolton, Bradford, Halifax, Leeds, Rochdale, and Preston, and in every case the advantages have been very great. Why, then, should the metropolis be excepted from these advantages? Why should 150 towns in Great Britain have a constant supply, and yet London be denied that boon? If it was necessary that powers should be given to a central body, the board ought not to shrink from it, and the public in general ought to assist in the movement. The acting engineer of the Liverpool Water-Works gave some very strong evidence upon that point, as did also Sir J. Heron. On the other hand, it was said that to introduce the constant supply, and transfer the management to a central administration, would be a source of increased taxation. That was one of the greatest objections that could be urged against the scheme. The honourable member for Paddington said £166,000 a year would have to be paid for 60 years as a penalty for making the change. That was a very strong statement to make, but he believed the fact really was that the whole debt would be extinguished in 30 years. Still upon this point it was quite impossible to speak with perfect accuracy; they could only make estimates. The companies since 1866 have made no returns of accounts, and therefore the data were insufficient. There were, however, certain facts which were known, as, for instance, that in 1866 the companies received £800,000 in the shape of water-rates; and that at the present time the rateable value of the metropolis was £18,000,000. This would give about 10¼d. in the pound. At present some places paid as high as 1s. 4d. Money could be raised by the board upon such security at the rate of 3¾ per cent. Looking at the matter, then, in a broad and comprehensive spirit, he thought, under these circumstances, it would in the end be found that the constant supply could be given to the metropolis without putting the ratepayers to any extra expense. Knowing, as he did, how much the poor suffered in the south of London, he should be the last person to advocate an increase of taxation; but, taking into account the total rents of the water companies, the rateable value of the metropolis, and the extent of the suburban districts that required water, he did not believe that there would be any appreciable increase of taxation. The very fact of the absorption of eight different managements into one must produce a large saving. The rate, too, might be collected with the other rates, through the medium of the parochial bodies, at a very slightly increased cost, and thus a saving would be effected. On these grounds, so far from the water companies being able to supply the water at a less rate than a central municipal body could, he believed that great economy would result from the change. It was not necessary to dwell upon this point, for Mr. Freeman's resolution did not allude to it. The resolution simply was that the report be generally considered, and that the conclusions come to by the Royal Commission are such as the board on the whole agreed with. Of course, it would be the duty of Government to consider into whose hands should be committed the supply, supposing they agreed to the conclusions of the commission, and he was quite content to leave the matter in their hands, feeling that they would do what was right. No further evidence of the necessity of a great alteration in the supply and distribution was required, than that afforded by the report of the commission and that of the committee of 1867. If the sanitary condition of the population of London is to be improved at all, it must be by adopting some such recommendations as those in the reports. The Government could not do a more praiseworthy act than to apply themselves immediately to this subject. They could confer no greater boon upon the people than to see that an abundant supply of water was taken to the doors of the poor, and they would merit the gratitude of posterity if they were the first to secure that desirable object.

Mr. Turner said there could be no difference of opinion as to the importance of this question. In a financial point of view it was certainly the largest that had ever come under the serious consideration of the board, but its importance as a financial question was much less than its importance as a constitutional one. It was important most of all as affecting the interests of the poor, whose health and comfort, whose cleanliness and decency, and consequently whose self-respect and general well-being, were most intimately involved in the decision which would ultimately be come to upon this matter. After the best consideration which he had been able to give to the subject, he had come to the conclusion in his own mind that the Metropolitan Board ought to give its approval and support to the conclusions and recommendations of the Royal Commission. As the representatives of the large population of the metropolis, they ought to take upon themselves the responsibilities which the Royal Commissioners had said ought to be undertaken by some body or other. He did not propose to enter into the large question which had been touched upon by some preceding speakers, as to what ought to be the future municipal government of London, or of the share that board, either in its present or in an improved state, would have in that government. He simply wished to take things as they are. At the present moment the Metropolitan Board was the only body representing the whole of the metropolis and having municipal functions. It had so far obtained the approval of the Legislature that its powers had been from time to time continually increased, and, from what they saw around them, they must conclude that the board had the substantial approval of the inhabitants of the metropolis. He made this assertion with some assurance, although he was quite aware that there was a great deal of grumbling occasionally with respect to the proceedings of the board. He agreed with the Bishop of Exeter that continual grumbling showed confidence in two things—in the strength of the constitution which could stand all the grumbling, and in the wisdom of those who were entrusted with the management, that they would profit by the criticism. He believed the board would not be upset by all the trumpet-blowing of different parties, and that they were wise enough and careful enough of the interests of their constituents to take the benefit of any hints made to them with regard to any well-founded complaints. The board was, therefore, in duty bound to express to the Government their readiness to undertake the responsibility of supplying water to London in case the Legislature should think fit in its wisdom to entrust it to them. Financially he thought they might safely undertake the responsibility. The honourable member for Paddington brought forward a great array of figures to prove that, whatever might be the result of their taking the water supply into their own hands in other respects, financially it would impose a very great burden upon the metropolis at large; and he tried to prove that by bringing forward, one after another, the different items of charge which would devolve upon the ratepayers. He made them amount altogether to £166,000 a year. He then assumed what would be the rateable value of the property; and he deduced from that a certain per centage of water-rates, which he said was very much larger than those which are now paid. Mr. Newton had already showed very distinctly that that argument was based upon a fallacy. Mr. Roche, by his manipulation of figures, attempted to show that the existing water-rate was very much less than is actually the case. Many other of the items which he brought forward were open to criticism of the same kind. He (Mr. Turner) did not propose to reply to that argument in detail, because he thought there was a much more satisfactory mode of dealing with the financial question than that adopted by Mr. Roche. What they had to deal with was not a question of absolute expenditure, but of comparative expenditure, as between the management of the companies and the management by the board. The expenditure might be easily classed under three heads—first, the maintenance of the works and the actual water supply; secondly, that which from time to time might be incurred by extending the works; thirdly, the charges on capital. Those three heads would be found to include every possible expenditure. With regard to the first head, Mr. Roche himself had admitted that by taking the management out of the hands of the companies, and placing it in the hands of the board, there must be a very substantial saving; and he estimated the saving at no less than £40,000.

Mr. Richardson: £25,000 he said.

Mr. Turner said at all events Mr. Roche had admitted that there would be a very considerable saving. With regard to the second head—the expenditure on extended works—if the management were placed in the hands of the board, only those works would be carried out which were absolutely necessary for the benefit of the metropolis; and if works were required for that purpose, it must be remembered that the companies also would have had to go to that expense. If works were necessary, and the existing companies were not disposed to furnish them, that would afford the strongest argument for removing the management of the water supply, and giving it to a central body. Clearly, so far as necessary works were concerned, the expenditure would not be greater in the

hands of the board than in the hands of the companies. Most probably it would be less, because the board would carry them all out under one system, under one management, while the companies would have to do so under separate managements and with different appliances. Under these two heads, then, there would be a financial gain by the transfer of the water supply. With regard to the third head—the charge on capital in the shape of dividends and interest—he apprehended that there would also be a very considerable gain by the change. The board had lately borrowed money at 3¾ per cent. Suppose, as assumed by Mr. Roche, they were obliged, in going for a considerable loan, to pay 4 per cent.; that, at all events, would be the utmost required of them. But do not the present companies pay more than 4 per cent. for their loans? Have not many of their loans been negotiated at 5 per cent.? and are the shareholders satisfied with 4 per cent. on the amount of their shares? No; they expect 5 or 6 per cent.

A Member: They pay 6 per cent.

Mr. Turner said it was clear that if the board borrowed, at the uniform rate of 4 per cent., that which the companies are now paying 6 per cent. for, there would be a considerable gain. Mr. Roche had said that if the transfer were effected the board would be called upon to pay off the capital in 60 years. He (Mr. Turner) did not regard that as a matter of course. He did not know that the Legislature would expect such a thing from the board if it continued, thus allowing the future ratepayers to have the property without any charge at all. Even if they had to do so, it would not be really a loss; it was only a question between the present ratepayers and the future ratepayers. Mr. Roche overlooked this obvious fact—that if the whole capital was to be paid off in 60 years, the amount would be reduced yearly; and as the capital was reduced, so the interest to be paid upon it would be reduced also. In 15 years a quarter of the capital would be paid off, and the interest on the remainder at 4 per cent. would really only amount to 3 per cent. on the original capital. It was quite enough for the board to show that there would be a gain on the whole, and it must be left entirely to the Legislature to apportion the charge between the present ratepayers and the future ratepayers. Unless there was very gross mismanagement on the part of the board, there would be a large gain in every way by the transfer of the management of the water supply from the companies to the board. It would, therefore, be quite safe to carry out the transfer. Next, constitutionally ought it to be carried out? At present the Metropolitan Board was the only municipal body representing the entirety of London. Considering the interests involved in the question, he was decidedly of opinion that the management ought to be undertaken by some municipal body, but Mr. Newton had dealt with this point so fully and effectively that it was unnecessary to say much more upon it. It was enough to add that so long as the administration of the water supply remained in the hands of private companies, the public duties of those companies must at times be at variance with their private interests; and, however much credit they gave the companies for liberality of intention, it was quite inconsistent with human nature to expect that the public interest would not suffer if it ever happened that their private and their public interests clashed. He trusted that the board, after full consideration, would declare by a very large and decided majority that they were prepared to undertake the duties which, as a municipal body representing the entire metropolis, they might be called upon to undertake, and that the Government might rely upon their hearty co-operation if they were disposed to act upon the recommendations of the Royal Commission.

Mr. Elt said the board ought to be as well informed upon this subject as upon any that ever came before them, for since 1821 there had been eight or nine reports from authorized bodies, Royal Commissions, or committees of the House of Commons, upon it. Certainly the last report of the Royal Commission surpassed all those which preceded it in fulness, and comprehension, and clearness, and in the correctness of its conclusions. He agreed with Mr. Newton that that report was most exhaustive, and that it would in future form the text-book of this question. If no other result followed the issuing of that report, there was one great good which it had accomplished—it had effectually pricked the bubbles of those gigantic speculative schemes of bringing the water supply of London from North Wales or the lakes of Cumberland and Westmoreland. If one thing had been proved more conclusively than another by the evidence given before the Royal Commission, it was that there is no city, not in England alone, but even in Europe, so well supplied with good and wholesome water as this great metropolis. Indeed, he knew of no other city in the world which was so favourably situated for a large supply of good water. The watershed of the Thames and its tributaries, and its peculiar geological formation, afforded large natural storeage-beds and large natural filtering-beds. Even in the driest seasons, when other cities were complaining of want of water, London had plenty, justifying the words of the poet, "Without o'erflowing, full." But what the board had to do was not to criticize the evidence given before the Royal Commission, but to consider whether they concurred generally in the conclusions come to by that commission, as proposed by Mr. Freeman, or whether they should agree to the counter proposition of Mr. Roche, and approve of most, if not all of those conclusions. Since the question had been under discussion he had very much modified his views upon the subject. He had carefully read through not only the report of the Royal Commission, but also the report of Mr. Ayrton's committee, and he had skimmed through the whole of the evidence given, so as to verify the conclusions which had been arrived at. He quite agreed with the conclusion of the Royal Commission, that at the present time London is supplied with pure water—that is, as delivered by the companies. He believed the companies, comparatively speaking, delivered as pure water as any supplied in England to a large town or city. He also agreed that the supply is abundant, for, on the south side of the Thames, 28 gallons per head per diem were supplied, and on the north side 34 gallons per head, giving an average of 31 or 32 gallons per head per day. He believed there was no difference of opinion between the members of the board with regard to the necessity of having a constant supply; but the great question for debate was, whether the entire management of the water supply of the metropolis should be placed in the hands of some central municipal body, or should be left in the hands of the water companies as at present. On this point the Royal Commission was at variance with the committee of the House of Commons. The former said it was impossible to get a constant supply unless the management was placed in the hands of a central municipal body, and they seemed to found their decision upon a sort of theory—almost a sentimental one—which was alluded to by Mr. Simon when he said: "This power that water companies have is entirely a new thing in the history of the world. This power of life and death in commercial hands is something for which till recently there has been no precedent in the world." That was a strong expression, but the Royal Commission, following that up, said: "The duty of supplying the inhabitants of a city with water has from a very early period been regarded as a municipal function, and the supersession of the municipalities by joint-stock companies is a comparatively modern invention." He considered that that assumption was altogether wrong. The history of the water supply to cities and large towns was altogether opposed to it. Originally the inhabitants got their supply from the neighbouring springs or wells. When the towns became enlarged the people employed water-carriers, and when the streams became insufficient to supply the whole of the inhabitants, the municipal authorities did not undertake the water supply as we understand it at the present day. What is meant at present by supplying water is to bring it to the houses of every inhabitant in the city or town, and to make them pay a water-rate for it; but when it was found that the wells or springs were not sufficient, the municipal authorities went to a greater distance, and brought the water artificially, by conduit, to the inhabitants, leaving them to get it from the public fountain, and no charge was made to those who so supplied themselves. Any one who went to Rome and looked at the ruins of those magnificent aqueducts which gave such a picturesque appearance to the valleys adjacent, would see that they did not bring the water to the houses of the inhabitants, but to the public baths and fountains, from which the inhabitants were obliged to supply themselves. The same was the case in London up to the end of the 16th century. Some centuries before there were actually streams of pure fresh water running through the thoroughfares of London, just as may be seen even now in some parts of Cornwall and North Wales. In fact, such a thing might be seen in the city of Wells, where there was an abundant supply flowing through the streets, from which the people took what they required. At the end of the 16th century it seemed to dawn upon the authorities that what they did for the public was not enough, and they granted powers to Peter Morris, a Dutchman, to erect works on London Bridge. That was not found to be sufficient. What was done next? Why, the municipality of London obtained powers from Parliament to bring water from a distance, and to charge for it, the same as we do now; but afterwards they were actually frightened at the gigantic power placed in their hands, and they neglected to carry out the scheme. It was, however, taken up by a private company, by Myddelton and others; and from that time to the present, London, like other large towns, has been supplied with water, not by the municipal authorities, but by a company. The example of London was followed by Sir Francis Drake, who brought water to Plymouth from Dartmoor, charging a rate upon the inhabitants supplied. Contrary to the assumption of the Royal Commission, that it had always been the duty of municipalities to undertake the supply of water, it had really been undertaken and carried out generally by trading companies. In fact, the Legislature actually set their face against municipalities undertaking anything which approached to a commercial speculation. Sir Robert Peel was entirely and strongly opposed even to granting corporations the power to undertake gas-works; and it is only within a comparatively few years—less than forty—that any corporate body in the kingdom has had power to supply water or gas to the inhabitants, and to make a charge for it. The point for consideration now was, whether the metropolis would be really better supplied with water, both as to quality and quantity, under corporate management, than under private companies. There was a great deal of information contained in the Blue-Books upon that subject, and no doubt engineers and officers of the different corporate bodies having such powers spoke in favour of municipal management. Mr. Hawksley, however, the consulting engineer of the Liverpool works, held an entirely different opinion. He had had considerable experience in these matters, and he thought that it was not so well that the works should be in the hands of corporate bodies, and that the public would be better served by leaving them in the hands of private companies. The custom of having water supplied by companies had existed now for nearly 300 years; but the practice of having the supply in corporation hands was of very recent introduction. A great deal of valuable information might be gathered, and a great deal of light thrown upon the subject, from the Appendix A M to the report. Although the Metropolitan Board was not directly referred to in the report, still they were discussing the matter really as though it were. He did not think any of the members would wish the board to take the management of the water supply, if the inhabitants of the metropolis would not be benefited by it; and his opinion was that they would not be able to supply, according to the evidence of the Blue-Book, a better quality of water or a greater quantity than at present. The appendix to which he had referred showed differently. It was said that there must be such restrictions, such domiciliary powers in the hands of the authorities, as Parliament would never consent to give to a private company. But the powers which the gas-works had were as stringent as they possibly could be made. Even if the supply of gas was in the hands of the Metropolitan Board, the powers could not be more stringent. Next came the question of questions—that which touched the pocket—whether the board could supply the public with an equal quantity of good water at a cheaper rate than the companies could. The appendix referred to the water supply of 21 provincial towns. Ten out of the 21 are under corporate control, the other 11 being supplied by companies. Of those under corporate control, 8 were on the constant supply system, while 9 of those supplied by companies had a constant supply. These 9 must have full powers in order to enable them to give the constant supply. Liverpool had been referred to; but Liverpool had an intermittent, and not a constant supply. Nottingham, Bristol, Leeds, Edinburgh, Newcastle, and Sunderland are all supplied by private companies on the constant principle. The quantity supplied per day varied considerably. At Glasgow the quantity is exceptionally large, a great deal being supplied on purpose to be wasted, in order that there may be a large flow into the Clyde to cleanse that river. But, with the exception of Glasgow, there is quite as much supplied per head by private companies as by corporate bodies. Throughout the discussion the argument had constantly been used—If the Corporations of such large towns as Manchester, Glasgow, and Liverpool are allowed to take the management of the water supply into their own hands, why should not London? His answer was simply this—Large as Glasgow is, Glasgow is not London. Glasgow, with its 500,000 inhabitants, covering 1000 acres, is not to be compared with London, with its 3,000,000 inhabitants, and covering an area of 75,000 acres. Then, again, what comparison could be made between even Manchester and the metropolis? It must also be remembered that Glasgow and Manchester have really governing municipal bodies which control the watering, the lighting, the levying of rates, and everything in the town, but there is no such body in London. Why was this? Because of the vastness of the area which London covers. Even the plans which are proposed for giving municipalities to the metropolis do not contemplate forming merely one municipality; they contemplate forming eight or ten municipal bodies.

Mr. Turner: One supreme body.

Mr. Elt said another distinction between London and these large towns was that, instead of being supplied by one water company, its vastness rendered it necessary that there should be several. Next with respect to the rate. The water-rate in towns supplied by water companies was not given in the evidence, but it was given with respect to those places where the corporation had the management. In Manchester they levy a rate of 9d. for domestic purposes and 3d. for municipal; in Glasgow, 12d. and 1d.; in Liverpool, 6¾d. and 6d.; and in Dublin, 12d. and 3d. For a series of years Manchester was not able to carry on its water supply without assistance, and had to make up the deficiency in the water accounts with the profits which were realized from the gas-works. They are not able to do that now, because the Act which gave them the power has expired. Bradford has the power to levy a rate in order to make up any deficiency which the water-rates do not cover. In 1867, in addition to the water-rate, 6d. in the pound was levied to make up the deficiency. In former years the deficiency had been so great that a rate of 2d. in the pound upon all assessable property had been levied. Another thing to be remembered was that, in those large towns which he had mentioned, the corporations were enabled to supply water for domestic purposes at the prices he had just given only because they derived so large an income from the sale of water for manufacturing purposes. In Liverpool the amount received by the sale of water was £40,000 out of total rates of £105,000, or more than a third; in Manchester, on the sale of water they received £56,000 out of a total income of £95,000—more than a half; in Glasgow they received £35,000 out of an income of £90,000—more than one-third. But in London the sale of water for these purposes was £174,000 out of an income of £800,000. From this £174,000 must be deducted £30,000, the amount received from the different parishes for parochial purposes.

Mr. RICHARDSON: Is the £30,000 the amount received by all the companies from all the parishes?

Mr. ELT said it was. As the water-rate charged by the companies in the provincial towns was not given in the evidence, no comparison could be made between them and the towns supplied by corporations on that point; he would, therefore, take the case of London. Mr. Fowler said that the water-rate in the metropolis, in some places, was as much as 1s. 4d. in the pound, but the fact was that the average rate of the eight companies was 10½d. The New River water-rate varies from 7½d. to 10d. Even the highest rate of the metropolis—10½d.—was much lower than the figures he had quoted with regard to other towns. In order to see what was paid for street-watering, he would take the two districts of Islington (a very large suburban parish) and Clerkenwell, which was covered with houses, and where all the streets were paved. In 1868, the year of drought, when there was very much complaint in other towns, Islington paid £2300 for watering the roads, flushing the sewers, and so on. That, with the assessment of Islington, would be ¾d. in the pound. In Clerkenwell the expenditure was £400, equivalent to a rate of ¼d. in the pound on the Clerkenwell assessment. Adding the ¾d. to the 10½d. would only make 11d., as compared with the provincial towns which he had mentioned, where it was never less than 1s. Another element ought not to be overlooked. In all the boroughs and cities where the municipal authorities supplied the water, the power to levy a compulsory rate only applied to places within the limits of the boroughs, and he did not think that the Legislature would give any municipal body in London power to levy rates outside the metropolis. The area of the metropolis was 11·7 square miles, but the district supplied by the different water-works was 252 square miles; therefore there was a large outside area which could not be reached by a compulsory rate. Mr. Hows doubted whether the board, as at present constituted, with its 45 members, would be able to undertake the water supply, even if it was desirable that they should do so, and that not only from the small number of members. Any one who made it a rule to attend to all his committees and board meetings must know that they were already pressed for time. Their duty now was to make a choice between the conclusions come to by the Royal Commission and the recommendations of Mr. Ayrton's committee. He did not say that no municipal body should have the water supply under its control, although, on the commercial principle, he should object to their having anything to do with gas; but, taking everything into consideration—seeing that London at present has a good and bountiful supply of water, as pure as it is necessary to be for domestic purposes, and that it is supplied at as cheap a rate as by corporate bodies in the provinces—he was rather inclined to say let well enough alone. The Royal Commission had come to the conclusion that, in order to have a constant supply at high pressure, the management must be placed in the hands of a central municipal body. He could not concur in that, because he believed that what was required to be done could be done without the change. He, however, heartily concurred in the recommendation of Mr. Ayrton's committee, that there should be a consolidation of the different water Acts, that they should be made plain to the meanest understanding, and that the Metropolitan Board should have control over the companies, in order to see that the requirements of the Legislature were carried out by them. He was in favour of the fullest control being given to the Metropolitan Board over the companies, and if the board could not carry out those powers, a new municipal body might be established to take the supply both of water and of gas into their hands. He scarcely knew how he should vote on the two propositions now before the board, but he should give Mr. Roche's proposition, when it came before them, his entire support.

FRIDAY, JAN. 21.

Mr. RUNTZ said that he desired to present the great question of the water supply of London from another point of view than that in which it had been presented to the board. It struck him as being a most appropriate subject for their discussion. The board was the great sanitary board of the metropolis. It was their great and special duty to attend to the preservation of the lives and the health of the people. The question of the water supply was one of a sanitary character entirely. It had been treated as a financial question, and as a financial question simply; but he did not propose to attend to that part of the question at all. Of course finances must be a subject for their consideration, but there was a deeper question than that. It would be admitted by all that an abundant supply of wholesome water is essential to human well-being—in other words, it is a necessity. If that be so, surely there cannot be a more important subject for consideration. The question then arose, is that supply what it ought to be? The reply must be in the negative. How is it, then, that it is not as it ought to be? The answer to that is, that the companies who have the charge of the water supply are bound to take into their consideration that which ought not to enter into the consideration of the minds of those who have to supply the water for this great metropolis. The first consideration of a private company is the making of a profit for the shareholders, but where life is concerned that consideration ought not to enter. The only consideration that should exist in the minds of those who have the charge of this great social duty should be, "How can we best supply the 3,000,000 and more people with a necessary of life at the least possible cost?" Whenever any proposal is made for the removal of any of the abuses that exist, of course, before the companies can determine what shall be done, they must consider what will be the effect of doing that which is proposed upon the dividend. They are bound to make a return to their shareholders. Hence the improvements we require, even when they come, come so slowly that generations die in the meantime. The great objections to the present condition of things is that the supply is intermittent. If it were not for the ignorance of the people, however, the intermittent supply would not be so sad as it is at the present moment. Tens of thousands—hundreds of thousands—do not know how to deal with the water when they get it in their receptacles. Only those who have paid attention to the condition of the poor, and know by personal inspection the condition of the receptacles, can have any conception of their dreadful state, Dr. Whitmore notwithstanding. As the chairman of the sanitary board of a large district in the east of London during the cholera, it was his duty to go amongst the sick and the dying, and especially to ascertain the condition of the receptacles from which the people drew their water. That sanitary board worked upon the landlords, and got fresh water-butts and fresh cisterns placed; but in consequence of the ignorance of the people, and the bad habits which accompanied that ignorance, their efforts were of little or no service, for the children amused themselves by filling up the new water-butts with anything they could throw into them. As a rule the water-butts stand near privy-doors; they are sometimes mounted upon two stools, and the waste-pipe goes into the water-closet, so that the overflow may go down the privy and thus cleanse it. He did not wish to detain the board any longer than was absolutely necessary, or he might give them details. However, the condition of those receptacles was so graphically described by Dr. Simon, the medical officer of the Committee of Council, that he could not do better than just read that short description. He (Mr. Runtz) could endorse all that Dr. Simon had said, for he had proved it by his own observation. In answer to the question, "Do you consider the system of intermittent water supply to be a good or bad one?" he said, "A very bad one." "What is the reason which induces you to consider it a bad one?" "My opinions about it are substantially those which I expressed in 1849 and 1850." Then, from the report of 1849, he said: "I consider the system of intermittent water supply to be radically bad, not only because it is a system of stint in what ought to be lavishly bestowed, but also because of the necessity which it creates that large and expensive receptacles should be provided, and because of the liability to contamination incurred by water which has been retained often during a considerable period. In inspecting the courts and alleys of the City, one constantly sees butts for the reception of water in open yards, and sometimes in cellars, and these butts are generally dirty, mouldy, and coverless, receiving the soot and all other impurities from the air, and filth from the adjoining cesspool. Nothing can be less like what water should be than the fluid supplied under such circumstances. It might be doubted, too, whether even in a far better class of houses the water supply could be pronounced good. The cisterns are better, but the long retention of water in leaden cisterns impairs its fitness for drinking. Every one who is personally familiar with the working of this system can testify to its inconvenience. Its evils press with immeasurably greater inconvenience on the poor than on the rich, yet these last are not without cause of complaint." Then, again, the intermittent supply is objectionable in consequence of the difficulty which the fire authorities have in putting fires out, as the engines have frequently to wait a considerable time for water. It would be of no use supplying them with keys unless they were acquainted with all the sluice-cocks in the adjoining neighbourhoods, so as to be able to stop the supply to the houses. The evidence which the board had from the towns where the corporations have taken the water supply into their own hands, is most favourable on this point. From Manchester we find that the amount of property saved while the companies had the supply was 59 per cent. of that which was attacked by fire; the amount saved now is 93 per cent. of what is attacked by fire; or, putting it in another way, of the property attacked by fire 41 per cent. was totally consumed when the companies had the supply, but since the corporation has had it only 7 per cent. has been consumed. In that direction it would be economical to have a constant supply. What are the objections to this constant supply, and why are they raised? They are raised principally by those who are most interested in paying dividends to their shareholders. A difficulty is raised about the fittings of the houses; and evidence was given by some engineers that £8 or £10 per house would be required to make the fittings what they ought to be. Surely it had been forgotten altogether that, by a little arrangement, they might put a tap outside a house, for no tenant would willingly subject himself to the chance of a pipe bursting inside. Remembering this, it was manifest that there could be no difficulty in at once substituting a constant supply for the intermittent supply. But the most complete answer to all these objections was, that the difficulties have been overcome by corporations that have taken up the question. Manchester has done it; Dublin has done it; New York and Philadelphia have done it; then surely it can be done in London. The substance of all this might be summed up in a few sentences with reference to the constant supply, and the proper parties for supplying it. We maintained that a public body was the proper party to supply it, for these reasons—*i. e.*, first, the object of a public body is to do the work in the best possible way at the least possible cost, while that of a private company is to obtain the highest possible profit for the shareholders; consequently a public body is more likely to attend to the purity of the water than a private company, because of the diminution of profit which must follow any steps in that direction. Secondly, regulations for preventing waste could be more rigidly enforced, and would be more readily obeyed, when framed and enforced by a public body. Then, again, a representative body is responsible to its constituents, and is therefore more likely to study the wants of the consumers, who are the constituents, than the private company, which is responsible only to its shareholders. The cost of distribution, too, would be much diminished by the abolition of salaried directors, rate collectors, and turncocks. Under these circumstances, argument based upon the probable increase of 1d., or 2d., or 3d. in the pound, even if it were likely to be so, should not be allowed to have much weight when a commodity of such vital necessity is under consideration. But what are the real facts with regard to this point? There is a table in one of the Blue-Books, in which four corporations are compared with private companies, and it is found that the corporations can and do supply water more cheaply than the private companies. With regard to the connexion of this question with the fire department, he supposed that if the water was on constantly, and hydrants were placed at regular distances, it would not be necessary to spend so much upon fire-engines. These would be comparatively unnecessary. Sir J. Heron, the town-clerk of Manchester, gave some most important evidence with regard to the desirability of giving the management of the water supply to public bodies. That evidence was founded on the experience of Manchester. He referred to what was recommended in 1850 by a commission of which the Duke of Buccleuch was at the head. That commission recommended: "It appears to be generally admitted by the witnesses examined before us—and who, being themselves connected with the existing water companies, have had every opportunity of observing the effect of the opposing interests of the companies—that a copious supply of pure water cannot be secured for the poorer classes of the community unless the duty of supplying it is placed under the management of some independent body." Another recommendation of the same committee was: "With a view of ensuring a sufficient supply, it is recommended that it be rendered imperative on the local administrative body charged with the management of the sewerage and drainage to procure a sufficient supply for the houses, for the flushing of drains, and for the extinction of fire." Another committee, appointed in 1867, some of whose recommendations have been taken and incorporated into the motion about to be proposed by the honourable member for Paddington, recommended that the Metropolitan Board of Works should have very great powers over the companies. He thought the carrying out of such a scheme would impose upon the board most onerous duties, and a constant system of supervision at the ratepayers expense. In that report no provision was made for paying for the supervision, and therefore the board would be constantly interfering with the water companies, and paying for their trouble. Surely, if such a large amount of superintendence is needed, a public body ought to have the opportunity of serving the water as cheaply as it possibly can be served to the constituents, and thus, instead of creating an extra expenditure, diminishing the cost. There was a remarkable opinion upon this subject contained in the second volume of John Stuart Mill's "Political Economy" (1849):

> I have already more than once adverted to the case of the gas and water companies, among which, though perfect freedom is allowed to competition, none really takes place, and practically they are found to be even more irresponsible and unapproachable by individual complaints than the Government. There are the expenses without the advantages of plurality of agency; and the charge made for services which cannot be dispensed with, is, in substance, quite as much compulsory taxation as if imposed by law; there are few householders who make any distinction between their "water-rate" and their other local taxes. In the case of these particular services the reasons preponderate in favour of their being performed, like the paving and cleansing of the streets, not certainly by the general Government of the State, but by the municipal authorities of the town, and the expense defrayed, as even now it in fact is, by a local rate.

This opinion was a most remarkable one, considering that it was written so long back as 1849. He looked upon this question as a great moral one. The habits of the people were greatly concerned in it. It had been said that cleanliness was next to godliness, and he (Mr. Runtz) fancied it was not a long way off. The people now are very dirty, and have not the facilities they ought to have to keep themselves clean. At the beginning of the present century men knew very little about the laws of health, and consequently did not obey them. Very little was done by public authorities to ameliorate the condition of the people in this regard. Since then much has been learnt about the subject; public attention has been directed to it; men's sympathies have been enlarged; and it is now considered a duty not only to attend to the children of our own families, but to the children of the State. The work the board generally had to do was of a matter-of-fact character, and did not leave much room for the imagination; but he might be pardoned if, while on this subject, he imagined

what might be called the good time coming—when the people shall be educated, and by that education every one of the future generation shall know something of the laws of health, and, being trained in good habits, shall render a willing obedience; when the different boards will have completed their systems of drainage, and taken away the filth from the houses. He trusted that the corporations would take up this great question, and, having already carried away the filth of the people, would carry purity to them, and offer them every facility for obeying the laws of health which will then be understood. When that time comes, and he believed it rapidly is coming, the people enjoying a more vigorous health, there will be less sickness; less sickness means less destitution; less destitution means less pauperism; less pauperism means a smaller draw upon the pockets of the ratepayers to keep the poor; and in that respect, too, this question of the water supply must be regarded as a most economical one. The time has arrived for a final decision on this matter. For the last half century the Government has had its serious attention drawn to it. Committee and commission have at irregular intervals followed each other. The inquiry is exhausted now by that splendid report of the Royal Commission which was under their consideration. That report settled the long vexed question as to the sources of supply. It was now known that there was no necessity to go to Scotland, or Wales, or to the Lakes, or anywhere else, except to the watershed of Old Father Thames. What has the Legislature been doing in the meantime while this inquiry has been going on? Recently they have passed two Acts of Parliament—the Thames Conservancy Act, and the Lea Conservancy Act; and the effect of those two in a short time will be to purify the great gathering-grounds of the watersheds of the Thames and the Lea. The water is in course of purification—ready for a great corporation like the Metropolitan Board to take the management of it into their hands; and it only remains for the Legislature to crown its works by carrying an Act to confer upon the board the necessary powers. As men foremost in deliberation, foremost in rank in this metropolis, in connection with local government, it was the duty of the members of the board to lead opinion in the matter, and not to be led by it. They ought to show that they were men abreast of the time, understanding their true position, and regardless of any opinion but that which was founded on their own conviction after mature deliberation. What they have now to do is to endorse the recommendations of the commissioners, and to express their willingness to do any thing that might be imposed upon them for the welfare of the people. And although they might not live to see the time which he had ventured to prognosticate, yet they would have the satisfaction of having been true to themselves, having acted up to their convictions, and having done their duty to the best of their ability.

Mr. Bevan said he should have thought Mr. Runtz would have been aware that a large number of his constituents had a constant supply of water, but not one word had been said about it. From what he had said, any one would suppose that Hackney was supplied wholly on the intermittent system; but the fact is, in that district any house may be built, and then placed on the constant system, with a pipe leading to every room. The Act of Parliament, too, gave two-thirds of the inhabitants of any district the right to claim a constant supply. This must at once settle the supposition that such a supply could never be obtained until the management is placed under the dominion of a public board. The East London Company were actually giving a constant supply in all parts where it is required, and they are putting it on, without any demand at all, in all the houses at present being built in Hackney and Bethnal Green. The committee, in their report, seemed to think that the Legislature would not allow such powers to be in the hands of private companies as were necessary for the proper carrying out of the continuous system. The best answer to that was that the Legislature had given those powers to the East London Company, and that they were not oppressively exercised; he scarcely knew whether they called once in a year or once in seven years to see that the taps were all correct. Under these circumstances he thought it advisable to leave the supply in the hands of the companies. Mr. Turner had supported the notion that the change would prove a financial success. One honourable member suggested that the water companies were earning something like 5 or 6 per cent. on their capital, and Mr. Turner seemed to think that the board could borrow money at 4 per cent., and thus effect a saving. No doubt that would be quite true if the shares could be bought up at par, but, judging from what had taken place in regard to the telegraphs purchased by Government, he was of opinion that very nearly £150 per share, instead of £100, would be required. At the present time the shares are all going up merely in consequence of the agitation on the subject; and as soon as ever it was decided that the board should purchase the works, the shares would run up to £150. He was very much pleased with the observations of Mr. Elt, who traced the history of the question for upwards of 300 years, and at last wound up by saying that he had not made up his mind which way to vote. It was plain that he had not given his opinion in order to influence the board, but, if possible, to influence himself; and, after a very elaborate speech, he did not succeed even in doing that. Mr. Newton seemed to think that the subject was too important a one to be left to trading companies. But most likely the mode of supply would be similar, under the management of the board, to what it is under the companies; or perhaps it might be preferred to have all the pipes of the metropolis connected together, and with one air-draught, and then, if that were to burst, there would be the risk of stopping the whole supply. Mr. Newton said that, if bread was as likely to be tampered with as water, he should feel inclined to give the supply of bread, as well as the supply of water, to the board. He (Mr. Bevan) had no doubt that, if a Royal Commission were to inquire into the supply of bread, it would be found that that is not on the whole purer than the water. In that case, perhaps, it would be recommended that a constant supply of bread should be given. So with regard to beef, which is often supplied not very pure, and no doubt many people would be anxious to have a constant supply of that. He thought the best way would be to get the companies to give a constant supply of water, for it would be a very dangerous thing for the board to undertake the management of the works.

Mr. Cyrus Legg said he was not yet convinced that it would be economical, or tend to the benefit of the district he represented, if the supply of water was entrusted to any particular corporation or board. There was no evidence at present that a constant supply could be obtained with certain regulations, but it was in evidence that the water as supplied by the companies is as pure, and good, and wholesome as that supplied to the generality of towns in the United Kingdom by the corporations. It was also in evidence that the watershed of the river Thames is sufficient for the supply of the metropolis for many years to come; but it was well known that the charge made by the companies is very moderate, and that those companies do not make enormous profits. Mr. Runtz had said that if the companies were got rid of, and the whole concern was under one corporation, the directors, and managers, and staffs of the companies would no longer be required, and thus a large amount would be saved; but his (Mr. Legg's) experience of public boards, and the way in which things are done by them, led him to a different conclusion. If there was a public purse to go to, from which infinitesimal amounts might be easily obtained from time to time, there would not be such care in the administration of the funds as in a private company. At present every director of a water company, and every shareholder, has an individuality of interest to obtain the supply at the least possible cost, and to give satisfaction to the customers by offering a good article. This was the feeling of all the water companies of the metropolis, and they only required some little regulation or control on the part of some public body in order to give entire satisfaction to the public at large. Although the board might get rid of all the engineers and other officials belonging to the companies, they must themselves employ engineers, sub-engineers, and engineers assistants, inspectors, turncocks, and so on, and some day or other they might have a recommendation from their engineer to build a large shaft on some elevated spot to supply all London, and to be a monument of his own genius, and of what the board can do. The ratepayers of the metropolis would never allow themselves to be taxed to the extent which was represented to be necessary. It seemed to him that in some districts the domestic rate and the general rate together would amount to more than the poor-rate of certain parishes. He believed that in Bermondsey those two rates would be equal to at least one-half of the poor-rate apportioned to the district, and the ratepayers would not be disposed to be taxed so highly for what they can get supplied much more cheaply under the present system. He quite agreed that it was desirable there should be some control over the companies, and that some public representative body should have the power of seeing that they carried out the Acts of Parliament. Separate mains ought to be laid down for use in cases of fire, and for flushing the sewers. These should be paid for by the whole of the metropolis. The great complaint against the water companies had really arisen from the supineness of the landlords in most instances. In the poorer districts the landlords endeavoured to squeeze as much as they possibly could out of their tenants, and neglected to look to the fittings of the houses. If a constant supply is given by the companies, there ought to be some regulations enforced, both against the landlords and occupiers, in order to secure proper fittings. This was all that was needed at present. The competition among the water companies will keep the rents down, and no doubt, after the shaking up that the companies have recently had, a good and sufficient supply of water will be given to the metropolis without any application being made to Parliament.

Mr. White said he regarded this discussion upon the water supply as the most important which had come before the board since he had had a seat there. It was his intention to give his cordial support to the resolution of the member for Kensington. He looked upon the supply of water as a municipal duty which ought to be carried out at once. His wonder was that the people of London had not demanded such a scheme long ago. Since the passing of the Metropolis Local Management Act the tendency of all legislation for the metropolis had been in that direction. The board was formed for the purpose of properly draining London; subsequently it had the control and supervision of the fire brigade, and it was only a question of time as to its having control over the water supply. Other towns had taken the matter into their own hands, and the result had been most satisfactory. Though Manchester had been referred to as a warning, yet the fact really was that there the scheme of giving the control to a municipal body had proved a great success. True the whole scheme was not yet perfected there, and it never would be until Manchester ceased to increase. The last thing the people of that town would submit to would be to have the control of their gas and water supply taken from them. Brighton, too, afforded another strong argument in the same direction. If the question was not grappled with then, its difficulties would increase year by year, and in a very few years the expense of the change, if it was deferred, would be nearly double what it would be at present. The protection of life and property from fire was another important consideration. He was interested in a town of 14,000 inhabitants and 2000 houses, which was supplied on the constant principle, and though there was not a single fire-engine in the place, it possessed adequate means of extinguishing fire. At various spots hoses were placed, under the control of the police, and whenever a fire broke out there was plenty of water at hand. He hoped that some day fire-engines would be unnecessary in London. The question should be dealt with earnestly and at once, and he trusted the board would unanimously agree to the resolution approving of the report of the Royal Commission.

Colonel Hogg said as he had been on the committee of 1867, he could not give a vote upon the question without making a few remarks. He was more in favour of the recommendations of the committee than of those of the Royal Commission. He entirely agreed with a great deal in the report of the commission, but he could not approve of their conclusions on the points where they were at issue with the committee. He was not one of those who would put a question of economy against the lives and health of the inhabitants, because he thought that money ought to be spent in order to save the lives and improve the health of the poor; but there was a medium course which might be followed. It was quite possible that by carrying out to some extent the recommendations of the committee of 1867, the board might be enabled to put pressure upon the companies to compel them to carry out their engagements properly; but he considered, from the experience he had had of the board, that the duties of the members were already sufficiently onerous, the amount of taxation passing through their lands sufficiently great, to restrain them from putting themselves forward, and saying they wished to take upon themselves the control of the water supply. If the Government or the House of Commons should say to the board, or to any other body representing the metropolis, "We consider it to be your duty to do so and so," then the members ought to accept that duty, and do the best in their power; but that was a very different thing from coming forward and offering to take upon themselves more duties when they had already sufficient on their hands. He looked upon the question simply as a matter between the rich and the poor. The rich had no reason, except in a very few cases, to complain, because virtually they had a constant supply from their cisterns. Mr. Runtz said that the water companies, generally speaking, were not anxious to listen to the complaints of the ratepayers; but he (Colonel Hogg) had on several occasions made complaints, and had always been received with the greatest courtesy by every officer of the water companies. He therefore thought that the Metropolitan Board might bring sufficient pressure to bear upon the companies to lead them to give a constant supply. It was beyond all things necessary that the poor should have such a supply; but any one who read the report of the committee of 1867 would see how extremely difficult it would be to secure it in those courts and alleys which had been referred to, where the receptacles were so horribly filthy. Some of the companies tried the plan of setting up constant supply taps in those places, but unfortunately, in very many cases, before the inhabitants had the chance of using them, the taps were wrenched off, and so the people lost their entire supply, as their butts had not been filled. The committee had a long discussion as to whether the necessary powers should be given to a corporate body or to the companies. One gentleman suggested that certain marks should be put upon the taps, and that it should be made a very grave offence to touch them. That, of course, must be for the House of Commons to decide. He would not in any way advocate an increase of taxation, unless there was an absolute necessity for it; and therefore, if it could be shown to him that a constant supply could not be obtained without having to inflict the double rate, he should not give his support to the motion. It may be said that a permissive clause was inserted in the Act of 1852. True, but that Act failed; because, although two-thirds of the inhabitants might claim a constant supply, there was hardly a district that did so, as many of the inhabitants did not care about having any alteration made. He could not give his vote in favour of taking this great power upon themselves until legislation had tried to make the companies give what was so much required, and had shown that in no other way could the benefits of the constant system be enjoyed.

Mr. Bidgood said it could hardly be credited by any rational person that a great people, such as is to be found within the bounds of this metropolis, permitted a great source of their comfort, and a necessary of life, to be in the hands of private companies who derived a profit from the employment of capital in the business. He therefore would not trouble himself about the question as to whether it would cost a trifle more or a trifle less if the change was effected. What the board had to decide upon was rather the adoption of which

principle is most likely to give the people an abundant supply of pure water, and control over those who are using their money. St. James's might be supposed to be a rich district, although the poverty of some parts of it could match with that of the poorest district in London. He believed there are more persons to the square acre within the neighbourhood of Berwick Street than are to be found in any other portion of the metropolis. When the epidemic broke out in 1852, all the inhabitants of a court had to go to a miserable standpipe, there to fight for precedence; those who happened to be stronger than others jostling their neighbours away in order to get a supply of water. Was that a state of things that ought to continue? Certainly not. And when application was made tn the water companies merely to give what would have been a great boon—a Sunday morning supply—they refused to do so. Eventually, however, they conceded so far that they gave a late Saturday night supply. But in a house where every floor is tenanted by separate tenants, and where, in some cases, the rooms are tenanted in the centre by one family, and in the corners by others, of course any ordinary supply must be exhausted within the course of a very few hours. Under these circumstances a constant supply is absolutely necessary, if habits of cleanliness are to be encouraged. It was true that, in consequence of the agitation of the question, the water supply is somewhat better now; but if the agitation was to die out, and the companies were to have all their own way again, would not the old state of things occur again? If he were a shareholder in a water company, no doubt he would like 6 per cent, better than 5½ per cent., or would thank those who managed to give him that 6 per cent., without looking very scrupulously into the way in which it was obtained. He did not wish the board to grasp at power over all the municipal arrangements of London, but he wanted the supply of water, in all its purity and affluence, to be in the hands of some public representative body, and not of a private company. He quite endorsed every word uttered by the honourable member for Hackney, and believed that his speech would be a text for many a righthearted man who wanted in this matter to see clearly how to act. They must pass by all considerations as to whether it would cost a penny more or less, and ask themselves the question, which is the most likely to give a thoroughly good supply of water—a private company or a public board? He had no doubt that the voice of public opinion would be unanimously in favour of the latter, and therefore he should give his hearty support to the resolution proposed by the member for Kensington.

Mr. SAVAGE said he understood the object of the motion to be to obtain for the board power over the water supply of London. He could not by any possibility read it in any other way, although the last speaker had said that he did not desire that the board should have the power. He hoped the board would pause before passing such a motion. He did not believe they were far enough advanced to make such a sweeping change. His honourable colleague had been twitted about being undecided as to his vote. That was a very fair joke; but where was the indecision? No doubt he had made up his mind to vote against Mr. Freeman's motion, but he thought it possible that some better amendment might be suggested than Mr. Shaw's, and hence the hesitation which he, in common with others, felt. His (Mr. Savage's) opinion was that Mr. Roche's amendment was somewhat better and more clearly expressed. Mr. Richardson's amendment was very pertinent to the question—"That the chairman be requested to express to Her Majesty's Government, on behalf of the board, that, in their opinion, the evidence taken by the Royal Commission on the Water Supply of the Metropolis is insufficient to enable them to arrive at any satisfactory conclusion as to the desirability of the water supply being transferred from the companies to the municipal authority; at the same time that the board desire to convey to Her Majesty's Government their willingness to undertake this duty, in the event of Parliament determining on the expediency of that course, and that they are decidedly of opinion that a constant supply should be provided." He did not think there need be very much fear that Parliament would thrust such a duty upon them. The board might by possibility pave a way for their own dissolution. He did not believe, honestly and conscientiously, that they would be entrusted with the power, and therefore he thought it better not to express to Parliament a desire to undertake it at present. Mr. Roche's amendment appeared more to the point. With regard to the necessity for a constant supply they must all be of one opinion, and that was the most important point of the whole; therefore they should seek to enforce it upon the companies. It was one thing to have such a supervising control, and another to have the entire supply of the metropolis in their hands. Mr. Turner had suggested that money could be raised at 4 per cent., but Mr. Bevan's reply to that was most conclusive, and all the advantage of borrowing at that rate would be swallowed up by having to pay large premiums for the shares. It was extremely doubtful whether the board would be able to supply the whole of London, even if it had the control, at a lower rate than the present. Much had been said about the expense of directorship, but that was only throwing dust in their eyes. Is there not often considerable economy in paying for services rendered in that form? Do not paid directors look very strictly after the interests of the concern in the administration of the capital? He believed the public received the benefit of those not very monstrous fees which are paid. If the board attempted to carry out efficiently the duties connected with the water supply of the whole metropolis, the members would have to be in attendance from Monday morning to Saturday night, and he was not quite sure that even then they would be able to give a proper amount of attention to the business. What Colonel Hogg said was very conclusive on this point. It would be a very dangerous subject for them to have to deal with. What they should stand out for was a constant supply, and a power in some municipal authority to compel the companies to give it; but it was not desirable to ask Parliament to place in the hands of the board the whole control. He supposed before long they would be wanting to have the supply of bread in their own hands too, for it seemed to shock some of the members that a profit should be made out of the supply of a necessary of life. He himself did not think it at all incompatible with the present state of human affairs that a profit should be made out of it. London is a purely exceptional case, and must be dealt with entirely on its own merits. So long as the companies can give a reasonable and proper supply, it is better to leave the management in their hands.

Mr. THOMPSON thought that Mr. Shaw's amendment went much farther than Mr. Freeman's resolution, for it proposed that the board should confer with the companies before going to Parliament. The resolution, however, did not ask the board on its own motion to go to Parliament, but merely to report to the Government that the Royal Commission has obtained the favour of the board, and that they recommended its adoption.

Mr. SHAW: I do not say anything about going to Parliament.

Mr. THOMPSON said the words of the amendment were—"That the Metropolitan Board of Works shall have an opportunity of examining the question of a constant supply of water, and of communicating with the companies on the subject, for the purpose of applying to Parliament, if necessary." Therefore, if Mr. Shaw did not intend that the board should take some ulterior proceedings before Parliament on the subject, it was impossible to know what the amendment meant. Mr. Roche, on the other hand, had distinctly stated, by the issue he had raised, that he did not consider any interference on the part of the board or on the part of the Government necessary, beyond that of obtaining for the metropolis a constant supply of water. But Mr. Richardson, in his notice of amendment, said that he considered the evidence taken before the Royal Commission insufficient to enable the board "to arrive at any satisfactory conclusion as to the desirability of the water supply being transferred from the companies to the municipal authority; and yet in the same breath he expressed their "willingness to undertake this duty in the event of Parliament determining on the expediency of that course? The resolution did not say the board were willing to undertake anything. The question for their consideration was simply—Is the board disposed to approve of the report of the Royal Commission? He should give his vote for the motion, and could not hesitate for one moment in assisting to carry to the Government the opinion of the board that the report of the Royal Commission ought to be adopted, and that power ought to be given to some municipal body to carry out the improvements which were necessary.

Mr. FREEMAN, in reply, said he was glad that this long and fair discussion had cleared the ground, at any rate, of all competing schemes for the supply of water to the metropolis. The board were in accord with the Royal Commission in thinking that the valleys of the Thames and the Lea, the chalk hills on the south, and other resources would be sufficient for a very long time to come. It was not the object of the committee to say anything of the character of the companies, but he ventured to think that when Mr. Roche passed such a high eulogium on all their proceedings, and when Mr. Bevan held them up to the admiration of the board, it was evident that they could not have paid any attention to Captain Tyler's reports. What was said of the East London Company, which Mr. Bevan placed before the board in such glowing terms? Captain Tyler's report in 1866 stated that they were distributing water so highly charged with poison that it was spreading disease, destruction, and death on all sides. The same thing was distinctly and clearly pointed out by the Registrar-General, who said the same thing in 1849 and 1854. Surely the members of the board could not forget that, until lamentable calamities occurred, and a great outcry was raised, that company continued to supply similar water, and made no alteration until they were compelled to do so. He was not at all sure but that, if a drought occurred again in consequence of a small rainfall, the same thing would not happen again. He had not intended to bring any charges against the companies, but when they were held up as having done everything that could be desired, he was compelled to express his opinion to the contrary. Then Mr. Roche said, "Well, but these companies, if they had the powers, would proceed to give a constant supply; and if there were powers placed in this board, the board would compel the companies to fulfil their engagements." He further said that Parliament would be willing to give the powers to the companies, because they had granted the same to companies in nine different towns. Well, if the companies were so desirous to do everything that was right and proper, how came it that they had never asked Parliament for the powers? On the contrary, they have never made a single effort except when stimulated and compelled to do so. He was greatly surprised that Mr. Roche passed over the sanitary condition of the metropolis, which Mr. Runtz so ably dealt with. Mr. Roche passed that question over as though the money question was not only the great question, but almost the sole one; and then he proceeded to call up figures from the vasty deep, which certainly, if true, would frighten the board from its propriety. But let them calmly, dispassionately examine those figures, and see what they really meant. The first item was £10,000,000 for purchasing up the companies. But if the companies can now pay 6 per cent. and 8½ per cent. upon their capital, surely the board, managing the same property, could guarantee them the 6 per cent. and the 8¼ per cent., and pay them just as well as they could earn it. But if this £10,000,000 represented the cost of purchase at a great premium, surely the board would be just as capable of paying 4 per cent. on the £10,000,000 as the companies are capable of paying 6 or 8 per cent. on their present capital. Coming to details, the first item set down by Mr. Roche was the interest on £400,000 a year on the £10,000,000; the second was £166,000 a year to the sinking-fund—1-60th—in order to pay off the capital. He did not, however, say that year by year the £400,000 would be decreasing, and that at the end of 30 years the interest would be only £200,000 instead of £400,000, and that at the end of 60 years there would be no interest to pay, the whole capital having been paid off. This would, indeed, be conferring a great boon on posterity. Mr. Roche said that that would be hard upon the present ratepayers. Then why should he suppose that Parliament would compel anybody to impose such hard terms upon them? The borrowing capital for main drainage works, and for making streets, afforded no analogy. The one would be remunerative, and would continually be earning a profit with which to pay the interest, while from the main drainage capital there is no return. Why, then, should Parliament refuse the power to raise money to purchase the existing water-works, the property itself being sure of giving a return for the outlay? Still he ventured to think there would be no necessity for putting by 1-60th annually with which to pay off the £10,000,000, in which case only £400,000 a year would be required, and the surplus might be saved. The working expenses were put down at £388,000 a year, bringing the total expenditure up to £954,000 per annum, less £160,000, which they might well assume that Parliament would not compel them to put on one side. This would leave the gross expenditure at £788,000. The expenditure of the water companies in 1866 was £329,000 for maintaining works, £161,000, for works and extension, £78,000 interest, and £310,000 dividend—making the gross expenditure £879,000. The income was £799,000 water-rates, £9000 general land and other rates, and £173,000 from miscellaneous sources.

Mr. ROCHE: That is only capital borrowed.

Mr. FREEMAN said the loans were brought in under another head. The income then amounted to £982,000. Mr. Roche himself had only set the required expenditure at £954,000, while, if the £166,000 was deducted, the expenditure would be £788,000, against an income of £982,000. There was nothing there to frighten them from either working for the good of posterity, or from reducing the price of water by means of the surplus. There must be a clear profit. Why should a municipal body be more extravagant and lavish than the companies themselves? Mr. Roche admitted that about £40,000 a year would be saved in directors fees, and to that another item must be added. For according to Mr. Roche's proposal the board was to have powers to enforce all the various regulations upon the companies, and that would cost the board, and through them, of course, the ratepayers, a considerable sum. He had no doubt this would bring the amount up to at least £60,000 a year. Mr. Roche's plan would inflict upon the ratepayers a very considerable expenditure beyond what was necessary, supposing the management was placed in the hands of the board. There was also a collateral saving which might very legitimately be considered—namely, that if they were the managers of the whole affair, and had the pipes constantly charged, the water would be used for extinguishing fires, and there could be no doubt that the saving under that head would be very large. Mr. Roche's plan would be very lavish and wasteful, duplicate officers being employed for doing that which, under a corporation, could be done just as well by one staff. Mr. Roche had told them that he meant to state the case as fairly as he possibly could, but his statement had been altogether an *ex parte* one. Everything that could tell for him was brought forward; everything that could make the case fair and impartial was kept back. Many items were kept back which ought to have been brought forward, and many were magnified which ought not to have been. There is no reason to suppose that the ratepayers would be taxed one single farthing beyond what they are now; on the contrary, he believed that the charge would be reduced at least one-sixth. He felt perfectly sure of that. Mr. Elt compared the metropolis with the manufacturing towns, and said that these latter used one-half the supply of water for manufacturing purposes. He (Mr. Freeman) looked upon that as the reason why those towns had to pay a higher rate than would be charged in the metropolis. The towns that supply water for manufacturing purposes supply it at a much less profit than if it were all used for domestic purposes, and hence as the manufacturing supply is increased, so is the profit diminished; while, on the other hand, in proportion as the domestic

supply is increased, so is the profit increased. Manchester consumes half its water at a very small profit, the metropolis consumes almost all its water at a large profit, and hence in London the price is lower; and if the board undertook the management there would be no increase in the charge. There could, therefore, be no reason for saying that because Manchester, Liverpool, and Glasgow charge high rates, they being manufacturing towns, it was safe to conclude that the rate in the metropolis would be high also. All the circumstances which have kept down the cost of water in London will continue, and hence the argument advanced by Mr Roche was in direct opposition to the fact. Then it was asked, "How would the board be able to levy two rates—one for watering the streets and flushing the sewers, and other parochial purposes, and another for domestic purposes?" Why, at the present moment, every parish does levy a rate for parochial purposes. He himself paid 3d. in the pound in his parish for flushing the sewers, watering the streets, &c. Why, then, should there be any difficulty in proceeding to levy the rate precisely as the main drainage rate was levied? Only let Parliament give the board the authority to call for a gross sum from the various parishes, and they could either get it from the different parishes, or send out and collect it themselves. Of course the domestic rate would be collected precisely in the same way as at present. The only difference would be that each ratepayer would be charged by the board instead of by the company. There would simply be a change of the executive. In reality, the change would concentrate the management, and so get rid of a multitude of expenses that have at present to be borne. Having disposed of this terrible bugbear as to increase of rate, he would turn to the real question before them, which was Aye or No, which should they approve of—the recommendations of the Royal Commission, or those of the parliamentary committee? How is the metropolis more likely to obtain a full, constant, abundant supply of pure water—under a municipality having full power and complete appliances, or under the present system of trusting to private companies? It was quite true that when the companies are dragged and compelled to go in the direction of the public interests, they yield; but it is only after a great deal of hesitation—in fact, it is leading the unwilling horse to drink. It is necessary for the public to be constantly looking after them, and putting pressure upon them. It is extremely difficult to carry out any improvements unless there is a central authority to enforce what is required. Until the Health of Towns Act was passed, and the vestries were empowered to go in and compel landlords to do away with that which was objectionable, and to put that which was necessary, no improvement was effected. The tenants were afraid to complain of the landlords lest they should be turned out of their houses; but when Parliament gave authority to the vestries, these almost unanimously went into the houses, and compelled the old cisterns to be abolished, and proper accommodation to be afforded for the supply of water. A very great change has been effected by that course of proceeding, and he believed that until some central authority was empowered to give a supply, the public would be constantly asking and seeking from the companies, but would not get the water in anything like the abundance, and certainly not with the cheapness that they ought to. He was quite sure that the adoption of such a scheme would give a constant supply at a less cost than by the plan suggested by Mr. Roche, and that the houses would be improved by it, and the well-being of the people secured. He was therefore ready to go on with it, although his resolution simply expressed approval of the report, and asked the Government whether they were going to do anything towards carrying out the recommendations of that report. Mr. Richardson proposed to go farther, and to offer the services of the board if Government wished them to undertake the scheme. That was a step beyond the resolution. How, then, could Mr. Savage protest against it as being too strong, and yet positively support an amendment which went much farther? Until Mr. Shaw's amendment was put upon the paper, he (Mr. Freeman) thought that that committee of the House of Commons was altogether defunct and gone. Parliament was not satisfied with it, the Government was not satisfied with it, for they would bring in no bill; no one was satisfied, otherwise why the Royal Commission? That clearly proved that the evidence taken before that committee was by no means satisfactory.

Colonel Hogg: The Royal Commission was appointed before that committee reported.

Mr. Freeman said he was very much surprised at that. Perhaps it hung fire, and therefore the commission was issued. However, when a decision was asked for between the two reports, there ought not to be a moment's hesitation between the sound conclusions of the Royal Commission and the very lame and impotent conclusions of the committee. It was their bounden duty to seek to keep down the expenditure, and to improve the water supply of the metropolis, and to do this they should express their approval of the last report.

On a division the amendment was lost, the numbers being, in its favour, 12; against, 15.

On the motion of Mr. Freeman, the debate was adjourned to Friday, the 28th, at two o'clock.

St. Marylebone Vestry.

At the Meeting of the Vestry, on Thursday, Jan. 20—Mr. Churchwarden Chubb in the chair—the following letter from Mr. W. H. Whiffin, secretary of the West Middlesex Water-Works Company, addressed to Mr. A. N. Shaw, one of the representatives of the vestry at the Metropolitan Board of Works, which, at a previous meeting, had been ordered to be printed, was taken into consideration:—

Office of the West Middlesex Water-Works,
19, Marylebone Road, W., Jan. 4, 1870.

Sir,—I have taken the liberty to address you, as a member of the Metropolitan Board of Works for the important parish of St. Marylebone, on the resolutions now under discussion at the board, as to the water supply of the metropolis being taken out of the hands of the water companies, and placed under the control of the Board of Works, on the plea that the Board of Works are better able to manage the business and bring about a constant supply than the water companies are; and on this assumption it is proposed to buy up the water companies, and entail upon the landlords of houses and their tenants, first, a great cost in the alteration of house-pipes and internal fittings, and the removal of cisterns and waste-pipes; and, secondly, to subject the ratepayers to a continual and harassing supervision, in order that such fittings may be kept in proper condition to prevent waste, without which it will be impossible to keep up a proper and adequate supply of water to all parts of the metropolis.

I will not trouble you with any observations with regard to the quantity and quality of the water supplied to the metropolis, further than to refer you to paragraphs 24 and 28 of the "Report of the Select Committee of the House of Commons on the East London Water Bills, &c., June 27, 1867," and to paragraphs 141, 213, 218, 259, and 261 of the "Report of the Royal Commission on Water Supply, dated June 9, 1869" which show that on these two heads both inquiries were satisfied.

And as respects the change from the "intermittent" to the "constant" system, I beg to refer you to paragraphs 66, 70, 75, and 108 of the same report of the House of Commons, and to paragraphs 228, 234, and 243 of the same report of the Royal Commission, to show that the transition cannot be made without considerable expense, great care, and subsequently with a very strict supervision.

I would now beg to call your attention to the following brief remarks, which I wish I could still further condense:—

1. I would affirm that if the constant supply is to be adopted, the water companies can effect the change better than any municipal board. They have had great experience; they are most desirous of satisfying their tenants in everything they can reasonably require; and they can carry out whatever regulations may be necessary, which the members of a municipal body, elected by the ratepayers, might be disinclined to enforce.
2. The companies do not object to give a constant supply, if adequate provisions are made to prevent waste, without which it would certainly be a failure, especially with regard to fires; for the waste in the lower districts would so diminish the head, or force of the water, that to obtain an efficient supply to a fire in the upper districts, it would be necessary for turncocks to shut several mains below to make the water rise to the higher levels. At present the turncocks have only to open one or two mains on the spot.
3. Under the present intermittent system there is always a plentiful supply of water at fires (which supply is afforded gratuitously) as soon as the turncock arrives; and his attendance might always be secured at the earliest possible moment, if the Metropolitan Fire Brigade would have a lad at every station, whose special duty it should be to run for the turncock as soon as the firemen are called, or if apartments at the Fire Brigade stations were to be provided for a turncock to reside in, for which accommodation the water company would not object to pay a fair rent.

   As it is, the turncock is generally at the fire before the engine arrives, and the water is flowing before the engine is ready for work; and if there were a constant supply it would be necessary for the firemen to be in attendance with their hydrants and hose-pipes before the water could be made available. Sometimes the turncock is not called till very late; but, according to the report of the company's inspectors, the proportion of first arrivals at fires is about two to one in favour of the turncock.
4. The cost of buying up the companies, which would be much greater than is contemplated, the expense of alterations in the house-fittings, &c., and the increased consumption of water, which must all be pumped up, would certainly not diminish the charges to be paid by the public generally.
5. The proposition to levy a special rate of 9d. in the pound on all dwelling-houses for the domestic supply, and a general rate of 3d. in the pound on all rateable property, would not only increase the charges on ratepayers generally, but would especially do so in situations eligible for business, such as Oxford Street, Regent Street, Strand, Fleet Street, Cheapside, Cornhill, &c., and, indeed, in all parts of the City of London, where the assessments are taken by the water companies considerably below the real value of the premises.
6. The water companies can levy rates as well as any municipal body, being restrained by Act of Parliament from exceeding a prescribed limit. I apprehend Parliament would not think it right to furnish the Metropolitan Board of Works, or any other body, with an unlimited power to levy such rates.
7. If the proposed change is to be entertained, the question ought first to be fairly brought before the ratepayers. I believe they would be generally disinclined to do away with their cisterns, and make the necessary alterations in their house fittings, &c., for no requisition for a constant supply has been received by this company under the 15th section of the Metropolis Water Act of 1852, the conditions of which being complied with, the company would be obliged to give a constant supply.
8. It is stated that the water supply is a sanitary measure, and therefore that there ought to be a constant supply under a municipal body; but the metropolis does not suffer from the intermittent supply, for if the Registrar-General's returns are referred to, it will be found that the death-rate in the metropolis is much less than at Glasgow, Liverpool, and Manchester, where the constant supply system is in operation.
9. I would add, in conclusion, that the constant supply system is not at all times a success. During the dry summer of 1868 the scarcity of water, combined with the waste, at Manchester, Stockport, Rochdale, Bury, Kendal, Bradford, Halifax, Sheffield, and other places, was so great that the constant supply had for a time to be changed the intermittent supply. At Glasgow the waste is very great, and the local board appear to be reluctant to enforce all the regulations necessary for its prevention; and at Croydon (close at hand) the waste is so great that it has been discussed at the local board whether it will not be necessary to give up the constant, and adopt the intermittent system of supply.—I have, &c.,

(Signed) W. H. Whiffin.

A. N. Shaw, Esq., 31, York Place, St. Marylebone.

Captain Oliver, R.N., moved, pursuant to notice—"That, in the opinion of this vestry, it would be undesirable to place the water supply of the metropolis under the control of the Metropolitan Board of Works; but they consider that the water companies should be required to give a more frequent supply than at present." He said the great question for them was how the public could be best supplied with water, and it was of very little consequence to them who gave it them, so long as they were well supplied. As far as he had examined the scheme under consideration, it appeared to him a very wild one. Although he was opposed to the present scheme, he thought if they supported the water companies at the present moment, without putting the screw upon them to ensure the proper discharge of their duties, they would lose a golden opportunity that might never come again.

Mr. Galsworthy did not think the motion went far enough. They ought to pass some decided expression of opinion with which the representatives could go to the Metropolitan Board of Works. He would therefore ask the mover of the resolution to accept the following amendment:—"That this vestry is of opinion that it would be most undesirable to empower the Metropolitan Board of Works to purchase up the water companies—first, because this vestry believes a constant supply of water in all cases to be unnecessary; secondly, because a constant supply, where required, can now be obtained, pursuant to the 15th section of the Metropolis Water Act of 1852; and, thirdly, because the cost of purchasing up the companies (apart from the expenses which a universal adaptation of the constant supply system would entail) would be enormous, and necessarily more than the market value of the property acquired. This vestry is further of opinion that the water companies should voluntarily, or if not, then by the Legislature be compelled to afford, in cases where desirable, a more frequent supply, so that there should, in all cases and at all times, be sufficient for all reasonable requirements."

The amendment having been accepted by Captain Oliver, a long discussion took place, in the course of which

Dr. Whitmore, the medical officer of health for the parish, said that practically the parish of Marylebone had a constant water supply. It was his duty some years ago, when cholera was threatening to rage, to communicate with the water company for a better supply of water for the poor neighbourhoods. He was met with great liberality by the company, and hardly a house was left without a constant supply. Sanitary officers would generally say that a constant supply was better than an intermittent one for health; but that would entirely depend upon the mode of carrying it out. A constant supply without cisterns would be most objectionable, and that the abandonment of cisterns was contemplated he concluded from the report of the Royal Commission, in which it appeared that Dr. Parkes preferred the constant supply, as doing away with the evils of house storeage. He made it his duty to obtain water from 50 or 60 of the worst places in the parish, and it was a *sine quâ non* that it must be taken from cisterns so situated as to be easiest contaminated. It was a fact that he found this water very little worse than that obtained from the stand-pipes of the company. The excess of organic matter was not sufficient to hurt the health of those who drank it. The explanation of this was that the cisterns were really emptied every day, and the water was not in them long enough to be contaminated. The cisterns in the large houses were much more liable to contamination than those in the poor, because the former were constructed on such a scale as to hold large quantities of water for a longer time. If they had the constant supply without cisterns, there would be a great loss of force, as there would be nothing but a constant dribbling. In the poorer houses, under the present system, through the absence of ball-cocks, the water, after filling the cistern, ran over, and his opinion was that this constant waste, as it was termed, had been the salvation of the poor. The water that ran over thoroughly washed out the drains, and had thus, he firmly believed, prevented many epidemics. The constant dribbling of water had been tried at railway stations, and had failed, as it did not possess sufficient force to prevent the accumulation of solid matter, and the additional resource of flushing had to be adopted. Under these circumstances the constant supply system would be one of the worst things the metropolis could have. If they could get cisterns large enough for the poor, and get a supply sent in every day, it would be far better.

Mr. Harlowe referred to two points in opposition to the proposed scheme, one being the extreme difficulty of altering the present arrangements in houses, and the other the extreme danger, in cases of fire, arising from the fact that several turncocks would have to be fetched to turn off several mains below where the water was required, before a sufficient head of water could be obtained.

Mr. NICHOLAY, one of the representatives at the Board of Works, having expressed his pleasure at the course the vestry was pursuing, and Mr. WINGFIELD having supported the resolution, it was adopted unanimously; and it was further ordered that copies be given to Mr. Shaw and Mr. Nicholay for presentation to the Metropolitan Board of Works, and that copies be sent, with the letter from Mr. Whiffin, to all the vestries and district boards of the metropolis.

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

133.—FRANCIS GEORGE FLEURY, of Merrick Square, Southwark, in the co. of Surrey, engineer, for "*Improvements in apparatus for drawing or raising and forcing liquids.*" Jan. 15, 1870.

143.—THEODORE BYRON HUBBELL, of Kentish Town, in the co. of Middlesex, for "*A novel arrangement and construction of gas-burner.*" A communication. Jan. 18, 1870.

153.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*Improvements in the treatment of acid tars obtained from Boghead mineral, schist, or petroleum.*" A communication. Jan. 18, 1870.

200.—WILLIAM HENRY BERRY, engineer, GEORGE JOWETT, mechanic, and JAMES WOOD, manager, all of Sowerby Bridge, in the co. of York, for "*Improvements in water or other liquid or fluid meters.*" Jan. 22, 1870.

227.—JOHN STRAIN, of Neilston, in the co. of Renfrew, N.B., civil engineer, for "*Improvements in pipe-joints.*" Jan. 25, 1870.

231.—ALFRED VINCENT NEWTON, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*An improved construction of meter.*" A communication. Jan. 25, 1870.

GRANTS OF PROVISIONAL PROTECTION.

3.—STEPHEN HOLMAN, of 10, Laurence Pountney Lane, in the City of London, engineer, for "*Improvements in apparatus for hinging, adjusting, and fastening gas retort-lids, covers, or doors, and other lids, covers, and doors.*" Jan. 1, 1870.

47.—GEORGE DOMINICUS KITTOE and PETER BROTHERHOOD, both of 56, Compton Street, Clerkenwell, in the co. of Middlesex, engineers, for "*Improvements in the packing of pistons, glands, pipe and other joints.*" Jan. 6, 1870.

61.—JOHN CARNABY, of 252, High Holborn, in the co. of Middlesex, gas apparatus manufacturer, for "*Improvements in dials for gas-regulators, and in dials in general, also in bezils or rings for dial-faces.*" Jan. 7, 1870.

67.—WILLIAM HENRY HUGHAN, of Newton Stewart, N.B., postmaster and guano and seed merchant, for "*Improvements in the treatment of nightsoil, sewage, urinous superphosphates, gas-lime refuse, and other refuse matters, for the purpose of deodorizing, of obtaining manure, and of diluting acids with urinous mixtures.*" Jan. 8, 1870.

68.—HENRY WILLIAM LOWDEN, of Douglas, Isle of Man, for "*An improved self-gauging and registering indicator for ascertaining the hourly, daily, or periodical consumption of liquids of any kind.*" Jan. 8, 1870.

78.—JOHN EDWARD LIPSCOMBE, of 8, Alexander Street, Salford, in the co. of Lancaster, filter manufacturer, for "*Improvements in filters or other apparatus for the purification of water or other liquids under a high pressure.*" Jan. 11, 1870.

80.—EDME AUGUSTIN CHAMEROY, of 23, Boulevard de Strasbourg, Paris, for "*Improvements in means and apparatus for gauging or regulating the flow of water or other liquids.*" Jan. 11, 1870.

86.—ROBERT DOYNE DWYER, of 85, Gracechurch Street, in the City of London, civil engineer, for "*An improved self-closing tap for drawing off liquids.*" Jan. 11, 1870.

133.—FRANCIS GEORGE FLEURY, of Merrick Square, Southwark, in the co. of Surrey, engineer, for "*Improvements in apparatus for drawing or raising and forcing liquids.*" Jan. 15, 1870.

NOTICES TO PROCEED.

2648.—JAN ANTHONY MULLER, of Amsterdam, in the kingdom of Holland, at present of 123, Chancery Lane, in the co. of Middlesex, for "*Improvements in apparatus for measuring and registering the flow of water and other liquids, part of which improvements is applicable to measuring and registering the flow of gases.*" Sept. 8, 1869.

2739.—HENRY COCKEY and FRANCIS CHRISTOPHER COCKEY, of Frome Selwood, in the co. of Somerset, for "*Improvements in apparatus for scurfing retorts.*" Sept. 21, 1869.

2748.—MALCOLM M'LEOD, of Manchester, in the co. of Lancaster, engineer, for "*Improvements in apparatus for sanitary purposes.*" Sept. 22, 1869.

2809.—JOHN RICHARDSON WIGHAM, of Albany House, Monkstown, in the co. of Dublin, Ireland, for "*Improvements in the means and apparatus employed in illuminating buoys, beacons, lighthouses, and other establishments or localities, which improvements are partly applicable to other purposes.*" Sept. 27, 1869.

3129.—FRANCIS TAYLOR, of Romsey, in the co. of Southampton, for "*Improvements in apparatus for receiving, drying, and deodorizing human excrement.*" Oct. 28, 1869.

3499.—JOHN CHARLES WILSON, of 26, Martin's Lane, Cannon Street, in the City of London, mechanical engineer, for "*An improved revolving engine and pump, applicable as a fluid-meter.*" Dec. 3, 1869.

3558.—JOHN LOADER, of Upper Clifton Street, Worship Square, E.C., and WILLIAM HENRY CHILD, of Worship Street, both in the co. of Middlesex, for "*Improvements in liquid-meters.*" Dec. 9, 1869.

3581.—ALEXANDER ANGUS CROLL, of Coleman Street, in the City of London, civil engineer, for "*Improvements in the treatment of ammoniacal liquor of gas-works to obtain therefrom salts of ammonia.*" Dec. 11, 1869.

3682.—GEORGE THOMAS LIVESEY, of the South Metropolitan Gas-Works, Old Kent Road, in the co. of Surrey, for "*Improvements in apparatus used in the manufacture of gas.*" Dec. 20, 1869.

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WANTED, by a respectable, active Man, aged 45, employment as RENTAL CLERK, COLLECTOR, &c., who is well experienced in testing the purity and illuminating power of gas, in book-keeping, and surveying. Is a good accountant, sober, and industrious; was over seven years as chief clerk and tester under a London Company, to whom he will refer. Good testimonials, references, and security if required.
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WANTED, to complete a Set, No. 23 of the JOURNAL OF GAS LIGHTING. Any subscriber willing to part with this number may obtain Three times the marked price for it by applying to Mr. KING, 11, Bolt Court, FLEET STREET, E.C.

A Steady Man wishes for employment as a Gas-Fitter, Main-Layer, and Gas-Works Erecter. Thoroughly understands his business. Good references.
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TO BE SOLD CHEAP, an 8-in. Parkinson GOVERNOR, nearly equal to new, removed in consequence of an enlargement.
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FOR SALE, the Apparatus of a small Gas-Work, comprising Retort-House Fittings, Condenser, Scrubber, Purifiers, Station-Meter, Gasholders, Governor, Valves, and sundry Connexions.
Also a GASHOLDER (counterbalanced), 50 ft. by 18 ft., with cast-iron tank (by Piggott), and an annular condenser, 17½ ft. high, in four sections, and 24-in. outside and 16-in. inside pipes.
The whole being put out of use from recent enlargement of works.
Particulars may be obtained on application to Mr. S. W. DURKIN, Gas-Works, SOUTHAMPTON.

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TO BE SOLD, by Private Contract, the above works, situate in the improving village of Chobham, Surrey, erected in the year 1865 under the superintendence of an eminent Gas Engineer. The works consist of—
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PURIFYING-HOUSE, 14 ft. by 13 ft. 6 in., containing 2 purifiers, with inlet and outlet valves.
The METER-HOUSE, 6 ft. 6 in. by 7 ft., contains a meter by "Crosley," capable of passing 600 feet per hour.
One Cast-Iron TANK, containing gasholder, 24 ft. diameter and 12 ft. deep, by "Hodge and Co., London," with 3 columns, pulleys, chains, and balance-weights complete.
There are about 2 miles of 4-in., 3-in., and 2-in. Mains, with syphons and service-pipes, together with 38 Meters.
There is also on the premises a brick-built Cottage, recently erected, containing four rooms.
The works are approached from the main road by entrance gates, and stand upon about a quarter of an acre of land. The whole is freehold, and possession may be had on completion of the purchase.
A portion of the purchase-money can remain on mortgage on terms to be agreed upon.
Further particulars can be had of Mr. WILLIAM WELLS, Surveyor, Ryde's Hill, near GUILDFORD; or of PHILIP W. LOVETT, Solicitor, GUILDFORD.

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TO CONTRACTORS & OTHERS.

THE Directors of the above Company are desirous of receiving TENDERS for the following works:—
Contract No. 1.—For the construction of a BRICK TANK, 61 ft. 6 in. diameter and 20 ft. deep, for a new gasholder. Also stone retaining walls.
Contract No. 2.—For the ironwork of a new GASHOLDER, on the telescopic principal, to contain 100,000 cubic feet of gas.
Plans and specification may be seen at the Office of John Rowe, Esq., C.E., 1, College Street, Wrexham, after the 31st inst., who will supply form of tender (which must be strictly adhered to) upon application.
Sealed tenders to be sent to the undersigned on or before the 15th day of February next.
The directors do not bind themselves to accept the lowest or any tender.—By order of the Board,
THOS. WALKER, Secretary.
Wrexham, Jan. 21, 1870.

EPPING SPECIAL DRAINAGE DISTRICT.

WATER SUPPLY.—CONTRACT No. 1.

TENDERS are required for the sinking and boring an ARTESIAN WELL in the parish of Theydon Garnon, in the county of Essex.
The said works will be carried out under the authority of Her Majesty's Principal Secretary of State for the Home Department, and under the direction of Mr. Jabez Church, of 17B, Great George Street, Westminster, Civil Engineer, being the person duly appointed by the said Secretary of State to perform the duty, in which the local authority for the district has made default.
The specification, form of tender, and other particulars of same can be seen on and after the 28th inst., and tenders must be delivered to the ENGINEER, at his Office, not later than Feb. 12, 1870.
The lowest tender will not necessarily be accepted.
17B, Great George Street,
Westminster, S.W., Jan. 24, 1870.

GASHOLDERS.

THE Directors of the Rochester, Chatham, and Strood Gaslight Company will be glad to receive OFFERS for the two undermentioned GASHOLDERS—the First, 42 ft. 6 in. by 13 ft., in annular cast-iron tank, with six columns, chains, and counterpoise weights, as now standing, in complete working order, at their Chatham Station; the Second, 35 ft. by 16 ft., with cast-iron plates to form tank, 35 ft. 6 in. by 15 ft., sheets, framing, six columns, guide-rollers, &c., as recently taken down, and now lying at their Gillingham Station.
Terms may be known and the Gasholders viewed by application to WILLIAM SYMS, Secretary, 56, High Street, ROCHESTER.

TO TAR DISTILLERS, &c.

THE Directors of the Holyhead Gas Company are prepared to receive TENDERS for the purchase of the surplus TAR and AMMONIACAL LIQUOR manufactured at their works for a period of One or Three years, from the 1st day of February next. Price per gallon or per ton.
Of Tar, the Company have about 12 tons now in stock ready for sale. JOHN ROBERTS, Manager.
Gas-Works, Holyhead, Anglesea.

BOROUGH OF SOUTHPORT.

THE Gas Committee are willing to receive TENDERS for the supply of GAS-MAINS.
Specifications and forms of tender may be obtained on application to the Engineer, Mr. Waugh, Gas-Works, Southport; and sealed tenders, endorsed "Tenders for Gas-Mains," must be sent to me on or before Wednesday, the 2nd of February, 1870.—By order,
KEIGHLEY WALTON, Town-Clerk.
Town-Hall, Southport, Jan. 22, 1870.

SUNDERLAND GAS-WORKS.

TO GASHOLDER MAKERS.

THE Directors of the Sunderland Gas Company are desirous to receive TENDERS for the construction of a TELESCOPE GASHOLDER of 120 ft. diameter and about 50 ft. high.
The drawings and specifications may be inspected at the Offices of the Company, Fawcett Street, Sunderland, and at the Offices of Messrs. Thomas and Charles Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W., on and after this date, and tenders must be delivered at the Offices of the Company on or before Tuesday, the 22nd day of February next.
The directors do not pledge themselves to accept the lowest or other tender.—By order,
J. H. COX, Secretary.
Sunderland Gas Offices, Jan. 26, 1870.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.
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THE Gas Committee are prepared to receive TENDERS for a new GASHOLDER, to contain 116,000 cubic feet, including erection.
Drawings and specification may be seen, and further particulars obtained, at the Manager's Office, Stockton-on-Tees Gas-Works.
Sealed tenders, endorsed outside, to be delivered to H. G. Faber, Esq., Town-Clerk, on or before the 16th of February, 1870.
The Committee do not bind themselves to accept the lowest or any tender.—By order of the Committee,
WM. FORD, Manager.
Stockton-on-Tees, Jan. 10, 1870.

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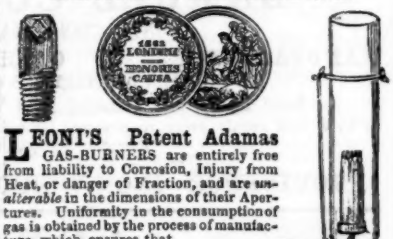

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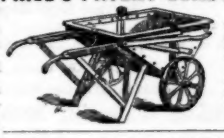

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Yield of gas per ton	10,296 cubic feet.
Illuminating power rather over	21 sperm candles.
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HYDRATED PEROXIDE OF IRON (BOG OCHRE),
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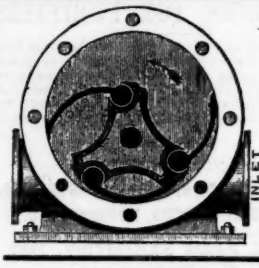

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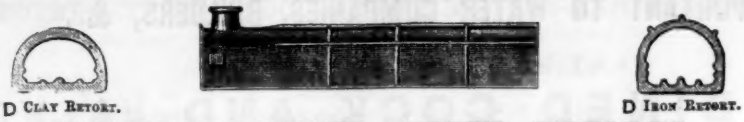

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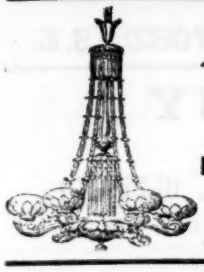

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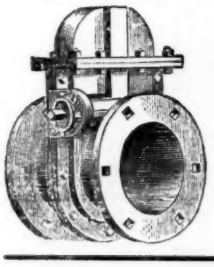

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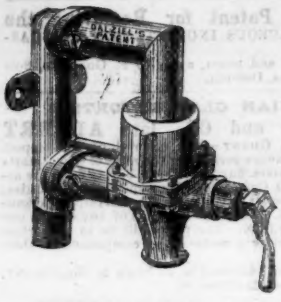

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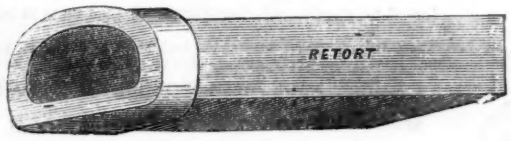

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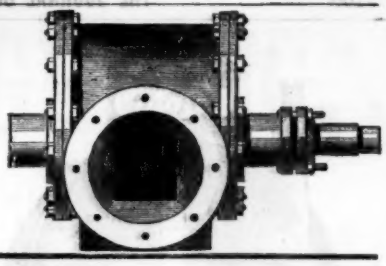

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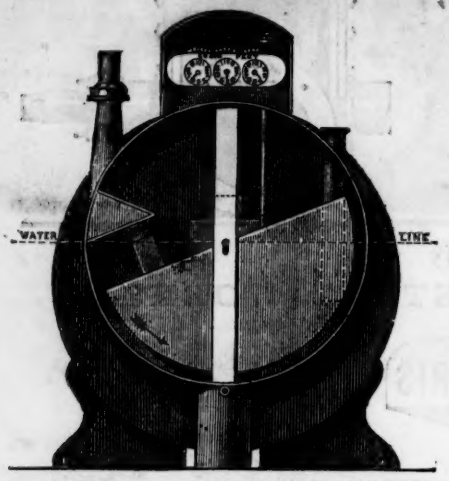

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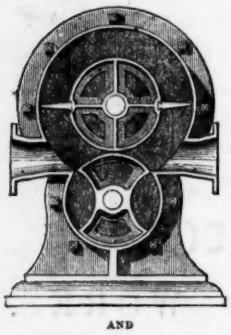

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